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Established 1835

Railway & Commercial Gazette

Vol. CCXL No. 6136

LONDON, MARCH 27 1953

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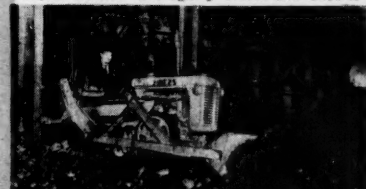
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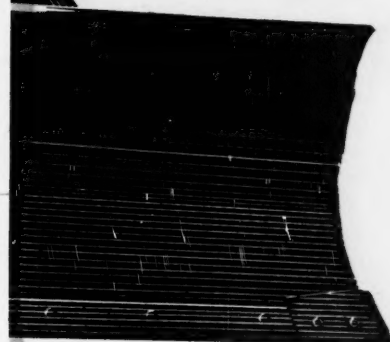
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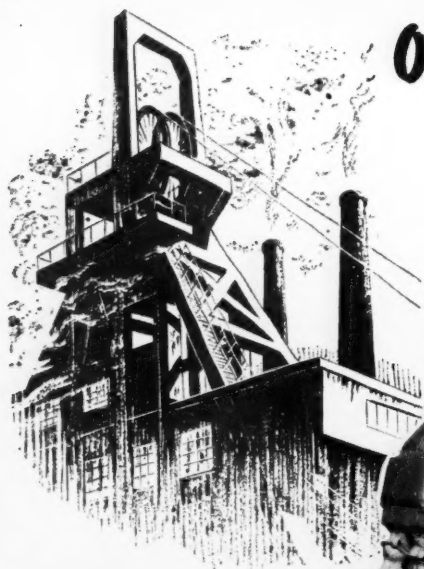
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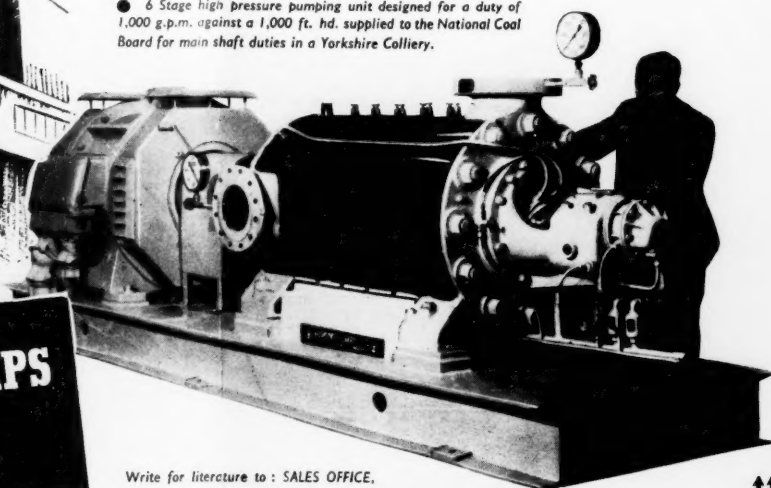
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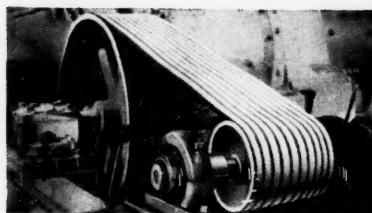


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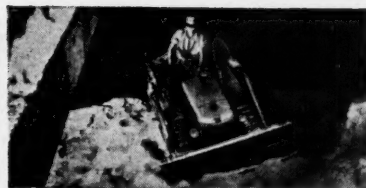
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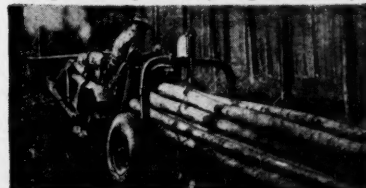
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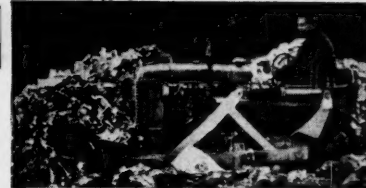
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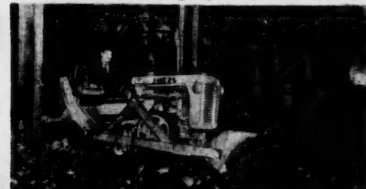
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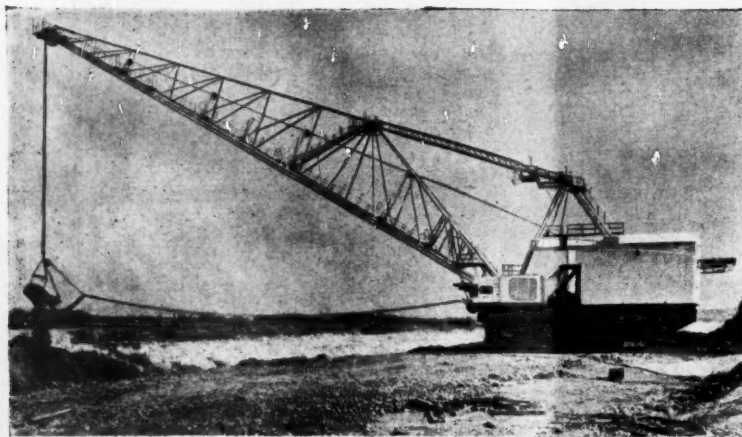


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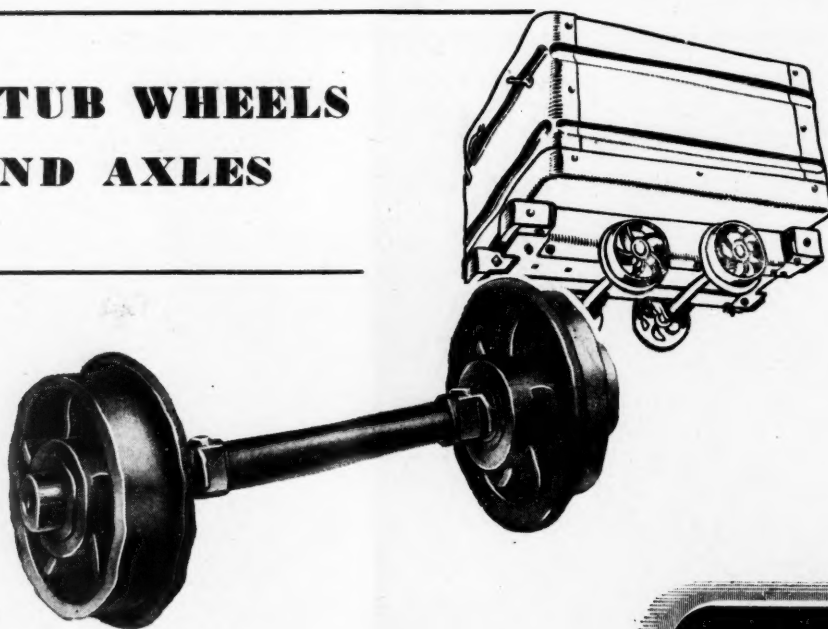
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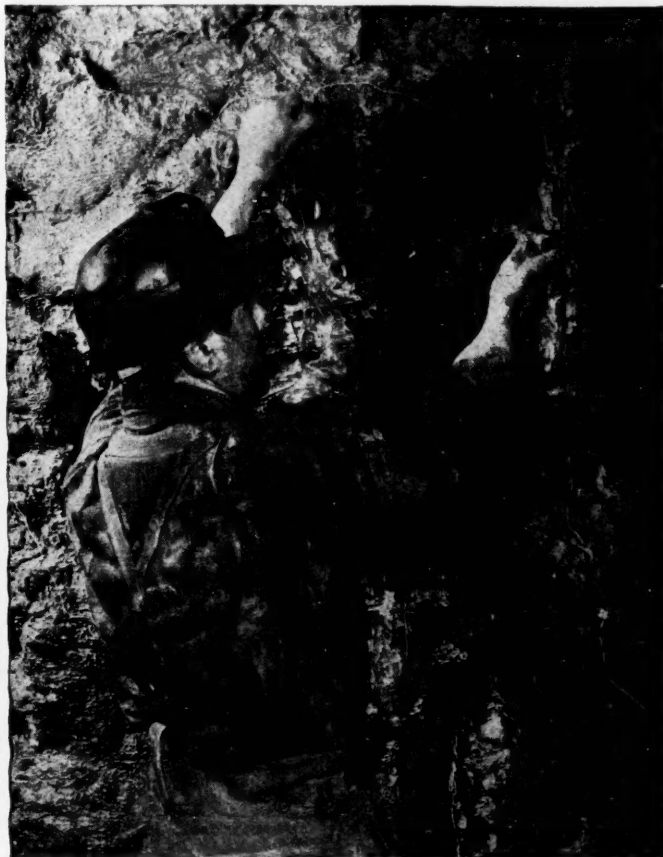
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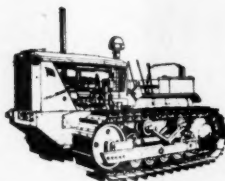
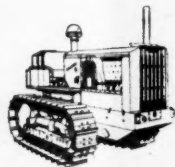
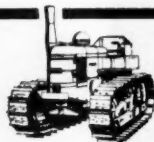
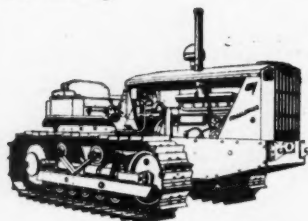
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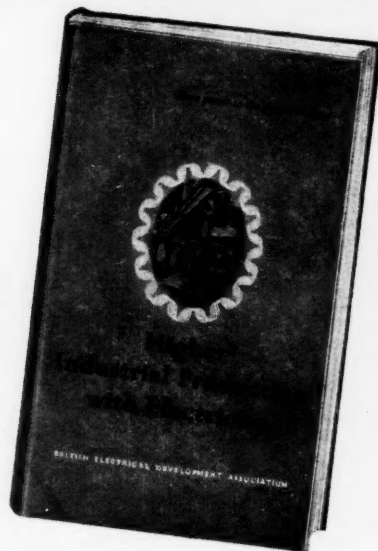
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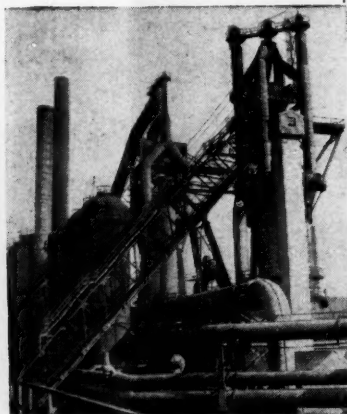


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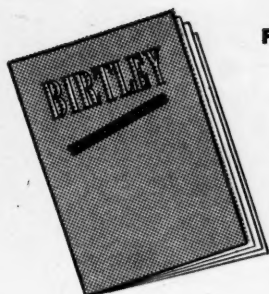
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The Mining Journal

Established 1835

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LONDON, MARCH 27, 1953

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Published by The Mining Journal Ltd. at 15 Wilson Street, Moorgate, London, E.C.2. MONarch 2567 Subscription £2 per annum

NOTES AND COMMENTS

The Death of Queen Mary

The news of the death of Queen Mary in the course of Tuesday night came as a sudden shock to the Queen's subjects, not only at home, but throughout the Commonwealth. Though the summoning home of the Princess Royal and the Duke of Windsor caused some public apprehension at the time, progressive improvements in the bulletins issued from Marlborough House had largely allayed public anxiety and it was widely hoped that she would be able to witness the Coronation of her grandchild, Elizabeth II, at the beginning of June.

At the age of 85, after a long and strenuous life, it was hardly to be expected that she had any great further expectation of life, at any rate in the full possession of her faculties and interests which she so happily preserved.

Queen Mary's life bridged one of the most critical periods in the history not only of the English people but of the whole world. Two tremendous wars saw the end of many European and some Asiatic dynasties but the hold of the Monarchy on the affections of the British people was only strengthened. Among the gigantic social changes in this country, none perhaps was more marked and possibly fateful than the progressive emancipation of women and their gradual introduction into the fabric of our national life, political, social, and industrial.

In this evolution Queen Mary played an important part, not merely in her sponsorship of humanitarian work in regard to hospitals and the provision of comforts for the army in the First World War, but the association of women with the armed forces in its early stages was much stimulated by her accepting the appointment of Commander-in-Chief of the Women's Army Auxiliary Corps. During the War she attended King George V on many of his tours and visits to army and industrial centres and she shared to the full the acclamation of grateful people which attended the King's Jubilee in 1935.

With the passing of her husband she passed into the more secluded role of Queen Mother when she moved from Buckingham Palace to Marlborough House. However, this change did not lead to the adoption of a life of seclusion of lugubrious widowhood for she found in many charitable and beneficent activities a field for many public engage-

ments which testified to the abiding influence which she continued to exercise in the affection of the British people. As a connoisseur of the arts she was able to devote herself more seriously to the indulgence of her aesthetic tastes and become recognized as one of the most discerning collectors of *objects d'art* of which the Royal treasures gave her an especial point of advantage.

It is perhaps one of her greatest achievements that to the end of her life she remained a personality and a force in the development of the British race and did much to establish the tradition of continuity and affection which the Royal House personally has attained not only in the Commonwealth, but in the World.

The Possible Abolition of Steel Rationing

There are substantial grounds for the prevailing belief that the abolition of steel rationing is imminent. With the exception of certain special types such as plates and sheets, steel supplies are now rapidly overtaking current requirements, and it is entirely in accord with the proclaimed policy of the Government, that they should put an end to an irritating system of rationing which no longer serves any useful purpose. Liberation from the interventions of State officials and restoration of freedom of contract between suppliers and consumers will be an immense boon to the steel industry.

There is, however, a wider domain in which the fight for liberty has yet to be won. In the annual report of the British Iron and Steel Federation there is a solemn warning that some of the industry's traditional export markets, particularly in Europe and South America, may be lost if the Government continues its restrictions on the tonnages of steel exports and its directives on the destinations of licensed shipments.

The facts cited are certainly impressive. Of the 1,089,000 tons of finished steel exported under licences last year 94.5 per cent went to Commonwealth or other countries with which we had bi-lateral trade agreements leaving only 116,000 tons for other countries which have hitherto been numbered amongst our traditional markets.

Urgent representations concerning ultimate consequences were made by the Federation but these proved of no avail

Then new and unforeseen developments occurred. In April last the Australian Government suddenly imposed severe import restrictions to protect the currency. Other Commonwealth countries followed suit and orders for steel were cancelled or suspended. Under a free economy the steel could have been diverted to other overseas destinations, but the rigidities of the licensing system could not be overcome with the result that the total shipments of British steel last year fell 10.4 per cent short of the tonnages actually licensed.

In the light of these facts it is not surprising to learn that the Federation has pressed continually for more flexibility in the disposal of steel exports which is all the more necessary in view of the growing competition and easing of prices which have become apparent in the export markets.

One concession has been made. The Board of Trade has agreed that any part of the steel export allocation for the first half of this year which cannot be delivered to Commonwealth or bi-lateral markets, may be diverted to other countries outside of these two groups. Obviously a much greater measure of freedom is necessary to enable the steel industry and the industries dependent thereon to make their full contribution to the drive for the expansion of exports. The end of the steel shortage is at hand. Equilibrium between supply and demand is likely to be achieved in a few months' time. When that day dawns there should be no hesitation in restoring a free market for the steel industry.

In a rich mine of information concerning the manifold activities of the Federation and its subsidiary organizations in the preparation of the £250,000,000 second post-war development plan, the training of operatives, foremen and works executives, the study of productivity and accident prevention and the elaboration of scientific research, by no means the least interesting section of the Federation report is that devoted to the achievements and future plans of B.I.S.C. (Ore) Ltd. This subsidiary of the British Iron and Steel Corporation Ltd. which is responsible for the purchase and transport of all imported iron and manganese ores now ranks as the biggest buyer of sea borne ore and the largest industrial charterer of shipping in Europe. Since its formation in 1946 B.I.S.C. (Ore) Ltd. has imported 58,000,000 tons of ore at a total outlay of about £215,000,000, and in the last twelve months has handled over 9,500,000 tons of imports from traditional resources together with increased supplies from as far afield as Brazil and Malaya.

To ensure fulfilment of the Federation's second development plan there can be no halting in the exploration and exploitation of new sources for the supply of ore, and it is reassuring to learn that "good progress" has been made. The new ore field at Conakry, French Guinea opened up in partnership with French interests has reached the stage of production and is expected to ship a total of 500,000 tons to British ports this year.

A five-year contract has been signed for substantially increased tonnages of Wabana ore from Newfoundland, and it is hoped that the Iron Ore Company of Canada will be in a position next year to send the first consignments of ore from the extensive deposits now being developed in Labrador.

Finally, it is learned that the preliminary exploration by a joint Anglo-French-Canadian Company of the deposit of high grade ore near Fort Gourand on the western fringe of the Sahara Desert have proved "very encouraging from the point of view of both tonnage and quality," and it is hoped that sufficient information will shortly be available for a decision to be made on the desirability of full-scale developments which will include the construction of a 200-mile railway track to the Atlantic coast and of course the necessarily port facilities.

Commonwealth Development Finance Company

The Company envisaged in the communique issued at the end of the Commonwealth Conference in December, 1952, has now been incorporated under the name of Commonwealth Development Finance Company Limited. The following have agreed to act as the first Directors of the Company: Sir Frederick Godber (Chairman), Mr. R. E. Fleming, Sir Geoffrey Heyworth, Mr. H. C. B. Mynors, Sir Ernest Oppenheimer, Sir Edward Peacock, Sir Robert Sinclair, and Mr. I. A. R. Stedford.

The authorized capital of the company is £15,000,000, divided into 8,250,000 "A" ordinary shares of £1 each and 6,750,000 "B" ordinary shares of £1 each. The "A" shares are to be subscribed by leading industrial, commercial, mining, shipping and financial interests, and the "B" shares by the Bank of England. It is the intention of the board to call up only 10 per cent of the capital in the first place. Under the Articles of Association the company has power to borrow up to an amount equal to twice the company's issued capital and it is at present intended that the company's operations should be financed mainly through the exercise of these borrowing powers.

As can be gathered from the foregoing, the company will finance approved projects chiefly by borrowing in the capital markets elsewhere rather than by using its own capital. For this purpose it will have the power to borrow up to £30,000,000, that is, twice its nominal capital. A distinctive feature is the way in which the company will function. All projects submitted for its consideration will have to satisfy three conditions, they must bear a direct relationship to the sterling area's dollar balance of payments; the applicants must have taken all possible steps to raise as much capital themselves or through the normal market channels in the United Kingdom, or locally in the area of the project under consideration; and finally, they must offer reasonable prospects of being profitable.

The formation of such a company is necessary, and indeed welcome. The composition of the Board, which reveals a nice balance between finance and industry, will ensure a progressive policy, inspire confidence, and make certain that worthy projects will not suffer from the lack of sufficient capital for their completion.

However, the sponsors of this new institution in previous announcements have made it clear that they do not regard the creation of a mere mechanism for financing commonwealth development a solution in itself, but stress the point that the new company cannot carry out its functions properly, unless and until, the volume of genuine domestic savings can be substantially increased and a larger surplus can be relied upon from our balance of payments position.

The Registered Office of the company is to be 14 George Street, London, E.C.4, to which all correspondence should be addressed.

Transvaal Chamber of Mines Exhibit

The Transvaal Chamber of Mines pavilion at the Central African Rhodes Centenary Exhibition in Bulawayo will be distinguished by a display of the largest collection of manufactured South African gold ever assembled north of the Limpopo River. Bullion bars each worth more than £10,000 will be made every half-hour of each day of the exhibition, and the value of the gold exhibited will exceed £250,000.

Mr. C. S. McLean, president of the Transvaal Chamber of Mines, said earlier this month in Bulawayo that the gold will be poured in an exact replica of a Witwatersrand smelter-house. He added that the operation will be performed by a team of South African reduction workers, who will bring the gold with them and smelt it under conditions as nearly as possible to those obtaining in a Rand plant.

The Exhibition will be held in Bulawayo from May 30 until August 29 this year.

Australia

(From Our Own Correspondent)

Melbourne, March 1.

The increasing demand in Australia for sulphur, mainly in connection with the agricultural industry and manufacture of fertilizers, has brought into increasing prominence the need to utilize the country's sulphide ores as a source of sulphur instead of imported elemental sulphur which is now in very short supply. For many years the Mount Lyell Mining and Railway Co. in Tasmania, has supplied mainland superphosphate works with pyrite concentrate, obtained as a byproduct in copper concentration, the pyrite concentrate assaying rather better than 50 per cent sulphur. Due to transport difficulties, some 180,000 tons are now stockpiled at the mine that could be absorbed by the mainland demand.

At Risdon, situated in Tasmania, roaster gases from zinc concentrate are used for the manufacture of sulphuric acid; Broken Hill zinc concentrate is roasted at Cockle Creek for acid production, and pyrite concentrate from Lake George Mines, New South Wales, and from Mount Morgan Mine, Queensland, are used for the same purpose at Port Kembla, New South Wales, and to a limited extent at Brisbane, Queensland. Western Australian needs are met by Norseman Gold Mines, rilling picked ore and concentrate to works at Perth. In South Australia, the manufacture of acid from zinc roaster gases is to be supplemented by using lead sinter gas at the Port Pirie smelters.

At Norseman developed reserves of pyrite amount to 3,700,000 tons. Mount Morgan Ltd. considers the pyrite content of its ore as an important asset and immediate policy is for a large increase in concentrate which, as is the case at Mount Lyell, is produced in the concentration of copper ore to smelting grade. Preparation and equipment are proceeding at Nairne Pyrites Ltd., in South Australia, where the major South Australian acid manufacturers, together with the Broken Hill Proprietary Co., are opening up an extensive deposit of pyrite, in which about 30,000,000 tons of ore, suitable for open cut mining, have been proved so far. This tonnage is estimated to contain 3,000,000 tons of sulphur. The ore will be concentrated at the mine and concentrate railed to users. On present indication it would seem that the future of this branch of mining is assured.

ENCOURAGEMENT TO MINING

The need for encouragement to the mining industry is recognized by the Western Australian Government which has provided the sum of £A250,000 to assist in the development of mineral deposits. It is not yet clear how this money will be used, whether by Government solely, or if sums will be made available to private operators. It is known, however, that some will be spent on the Collie coalfield and that a State plant is to be erected for the treatment of lead ore at Northampton. In Queensland, a Government geological team will return to work and resume investigations in the Cloncurry-Mount Isa field, as soon as the wet season is over.

WESTERN AUSTRALIA'S GOLD OUTPUT GAIN

Western Australian gold production in 1952 reached a total of 720,366 f.oz., which compares with 622,190 f.oz. in 1951. An important contributor was Central Norseman Gold Corporation which in addition to increased output of ore, has been maintaining an average of 10 dwt. per ton to the mill, and in 44 weeks to January 26, had treated 137,426 tons of ore for the recovery of 68,652 oz. of gold.

This financial year's mean of 10 dwt. per ton compares with 6.6 dwt. in the previous period. It is probable that there will be a further increase in the State's output this year, for Central Norseman can be expected to continue on good ore for some time, and Great Western Consolidated can be expected to produce between 3,000 and 4,000 oz. per month. Production by the State for the month of January is reported as 57,406 f.oz., compared with 55,451 oz. for January, 1952, and 50,806 oz. for that month in 1951.

THE SEARCH FOR OIL

Two areas are being actively prospected for oil. That which is attracting most attention at the moment is the Roma district in Central Queensland, where showings of petroliferous gas and oil have been obtained in the past, but have not led to anything of commercial importance. In post-war years, an offshoot of the Shell Oil Co. carried out extensive geological work and scout drilling; the first deep test well, unfortunately bottomed unexpectedly on granite at about 3,600 ft. instead of at a much greater anticipated depth, and as heavy expenditure had then been incurred, the company decided to withdraw from further effort.

A company, Associated Australian Oilfields, has continued operations, and recently bottomed a well above the 4,000 ft. horizon. A showing of gas was seen at 3,425 ft. and oil sand penetrated at about 3,551 ft. Work since has been directed to testing but difficulties have arisen, the oil sand being either associated with a saline water sand or a nearby water sand has broken into the oil sand. Possibilities of the well will, therefore, take some time to ascertain.

West Australian Petroleum Ltd., comprising Ampol Petroleum Ltd. and California Texas Corporation, have already spent £A1,400,000 in exploratory work in the Exmouth Gulf region of the Western Australian north-west coast, and it is expected that a further £A1,000,000 will be spent before the end of this year. Drilling machinery and equipment on the field are capable of reaching a depth of 15,000 ft. The site of the first deep test well has not yet been fixed.

CONSOLIDATED ZINC CORPORATION

This company is engaged in considerable construction and exploratory work. At Broken Hill, the new mill and power plant on New Broken Hill Consolidated mine have been brought into operation; this will permit the mining and treatment of larger tonnages of New Broken Hill Consolidated ore, and will permit a greater throughput in the Zinc Corporation mill, which previously treated its neighbour's ore. At Cobar, also in New South Wales, old mine workings are being reopened for examination.

At Stradbroke Island, off Queensland in the latitude of Brisbane, zircon-rutile sand deposits are being drilled and a pilot plant is operating on the treatment of the sands. This is likely to develop into an operation of some size, as the occurrence is extensive. A lead-zinc deposit is being drilled near Derby, in Western Australia. Intersecting work is being carried out in the McArthur district of the Northern Territory, where lead-zinc occurrences are being drilled; this is believed to be a comparatively recent discovery.

Also situated in the Northern Territory, the Bulman prospect is being examined. The company's chief interest in that region is the opening up and working of the Rum Jungle uranium deposit, and the fact that Zinc Corporation has undertaken this work for the Commonwealth Government is an indication of the probable importance of the deposit.

The French Steel Development Plan

France is nearing the termination of her first post-war steel development plan, and the Government's second modernization plan for the entire national economy is being prepared, although the latter scheme does not emphasize iron and steel to the extent of its predecessor. In the following article, condensed from *Monthly Statistical Bulletin Vol. 28 No. 2*, published by the British Iron and Steel Federation, a comprehensive resumé of the French steel industry is presented.

In 1929 the French steel industry produced approximately 9,711,000 tonnes, a capacity which represented a peak output for the industry and the nation, yet even at the figure quoted the limits of capacity were not fully attained. No far-reaching modifications of equipment took place before the war apart from the renewal and reconstruction of certain units, and in 1946 the steel capacity of France was estimated at about 12,000,000 tonnes. This theoretical capacity, however, could not have been fully utilized, as fuel and labour were in short supply during the immediate post-war years and costs at the older plants would scarcely have been competitive in foreign markets.

In its report of November, 1946, the Modernization Committee pointed out that the existing dispersal of productive equipment raised the cost level of the industry, and as the average French plant was too small to utilize modern large-scale equipment it hampered modernization in addition. These factors resulted in an uneconomic utilization of labour, with a corresponding adverse effect on costs.

It was therefore not surprising that the Monnet Plan concentrated on the modernization of steel plant rather than on expansion of capacity. This attitude is particularly apt when it is remembered how hard the equipment of the industry had been driven during the war years, at a time when the continuance of normal maintenance work was impossible.

The objectives for the iron and steel industry, as defined in 1947, were therefore first, to overhaul and modernize productive capacity, which had not been fully utilized since the depression of 1931; second to adapt production to the changing pattern of demand, in particular by the construction of two continuous wide strip mills; third, to reduce coke consumption by the extension of ore preparation; and fourth to modernize and improve ancillary installations, such as power stations and coking plant.

THE PROGRESS OF THE PLAN

Most of the major projects were begun in 1947, and by the termination of 1951 were either finished or approaching completion. A number of minor projects were delayed and the completion of others begun in 1951 and last year is anticipated within two or three years. Yet the plan is still well in reverse of programme, although much reorganization of productive capacity has been carried out, new equip-

ment added, and total capacity raised from 10,000,000 tonnes to approximately 12,500,000 tonnes. It is interesting to note that the figure of 10,000,000 tonnes given is mentioned in the report for August, 1952, but conflicts with the original estimate of 12,000,000 tonnes made in 1946.

Steel output in 1951 was restricted by shortages of coke and scrap to 9,800,000 tonnes whilst in 1952 production was less than 10,900,000 tonnes, equivalent to 87 per cent of the 1952-53 target of 12,500,000 tonnes. Nevertheless, crude

steel output has showed the following final increase:

9,711,000 tonnes (1929),
6,221,000 tonnes (1938),
4,408,000 tonnes (1946),
9,835,000 tonnes (1951), and
10,867,000 tonnes (1952).

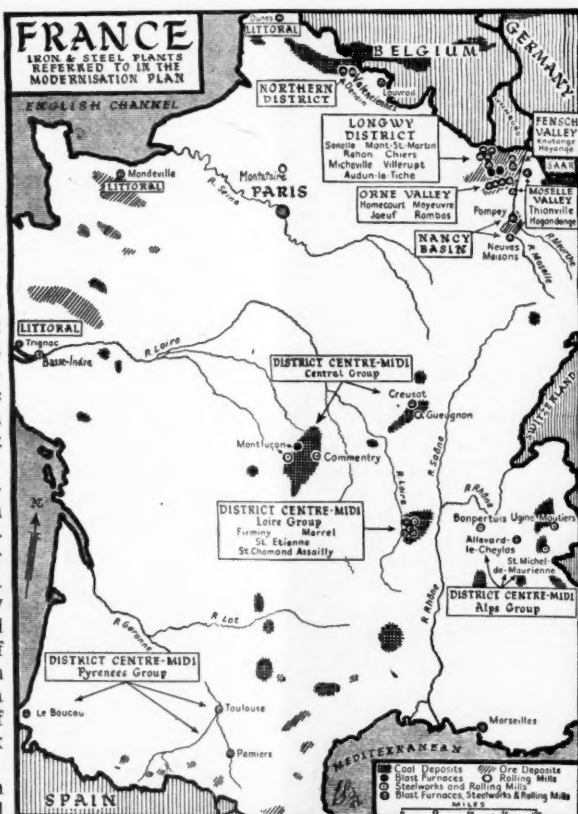
By way of oxygen blowing, the pre-refining of Bessemer pig iron and by other methods, much has been done in steelworks to improve the quality of the Bessemer steel which constitutes some 60 per cent of French production. New equipment is being installed continually, for during the 1948-1950 period six open hearth furnaces were built or modernized while in 1951 six new furnaces were completed and another was reconstructed. Since December, 1952, three more furnaces have been put into operation, with a further four still under construction.

The installation of 1,000/1,200 ton mixers and of new blowers was continued in 1951 and the reconstruction of the war-damaged Bessemer shop at Mondeville completed. In 1952, two installations for oxygen blowing were completed, while in 1953 the three new converters at 40 tons will be completed for

Sollac and the capacity of another Bessemer plant extended. Several new electric furnaces were completed in 1949 and 1950, whilst two 10/12 ton arc furnaces commenced production in 1951 and a 25/30 ton arc furnace was due for completion in 1952. Three other electric steel furnaces are under construction as well as one for refining special grades of pig iron.

Simultaneously, great advances have been made in the field of ore preparation. Beneficiation of the siliceous ores of Lorraine has raised a number of problems in the past, as concentration is only possible after crushing at 0.5 mm., while a number of impurities, notably phosphorus, always remain after the process. However, recent tests have shown that certain highly heterogeneous siliceous ores lend themselves well to beneficiation.

Ore preparation was almost non-existent in pre-war years, but currently is becoming more widely practised.



The Iron and Steel Centres of France

Three crushing and sintering plants became operative in 1951, four more were due for completion in 1952 and two others are still under construction.

In the modernization plan 15 new blast furnaces were planned of which two were completed in 1949 and another unit in 1951. Six more are to be completed by 1953 and the remainder in the period 1954-1955. Of thirty furnaces scheduled for rebuilding, 22 were completed by the end of 1951, seven more were due to begin production in 1952, with one for completion this year. Moreover the rebuilding of a further eight furnaces over and above the plan was started in addition in 1952 and these units are destined to commence operations during 1953-1954.

Pig iron output has shown the following decline since 1929: 10,300,000 tonnes (1929), 6,012,000 tonnes (1938), 3,444,000 tonnes (1946), 8,750,000 tonnes (1951), and 9,772,000 tonnes (1952).

FINISHED STEEL PRODUCTION

The chief projects within the modernization in France have been the construction of two continuous wide strip mills with their ancillary equipment. The first of these was completed at Denain in Northern France by Usinor in

with the electrification of two other mills. In 1952 the modernization of two blooming mills and a 3-high mill was due for completion, and a slabbing mill and two medium mills are still under construction. A finishing mill for small sections, a rod mill and a narrow strip mill commenced production in 1951, whilst four rod mills were still under construction in 1952.

THE COST OF THE PLAN

By the end of 1951 a capital investment of £267,000,000, representing approximately 60 per cent of the total envisaged expenditure of £446,000,000, had been carried out. It was anticipated that by the end of 1952 this proportion should have reached 80 per cent. The two wide strip mills accounted for £76,000,000 of the total expended to date, coking plant and power stations £18,000,000 and other equipment £173,000,000. Up to the end of 1951 the Modernization and Equipment Fund had granted loans totalling £81,000,000, or an equivalent in excess of 30 per cent of the total amount spent. The table shows expenditure in the French iron and steel industry from 1947 to 1951, based on end-1951 prices, and planned expenditure thereafter.

OUTPUT OF ROLLED PRODUCTS
(000 tons)

	1929	1938	1946	1951	1952
Railway					
Material	796	419	149	472	515
Structurals . . .	878	346	215	460	552
Bars and rods, incl. wire rod	3,068	1,877	1,492	3,209	3,562
Tube semis . . .	187	160	150	371	395
Hoop and strip, incl. tube strip	260	189	193	418	432
Plates	678	475	398	849	984
Sheets and black plate	569	571	400	1,129	1,176
Tinplate*	85	131	48	131	144

* The tinplate base is included in the item above.

EXPENDITURE UNDER MONNET PLAN
(£000,000)

Year	Power Stations	Coking Plant	Iron & Steel Plant *	Total
ACTUAL				
1947 & 1948	—	2	57	59
1949	2	2	56	60
1950	3	3	73	79
1951	3	3	62	68
ESTIMATED				
1952	5	6	78	89
1953	6	5	58	69
After 1953 . .	1	—	21	22
Total Cost . .	20	21	405	446

* Including workers' dwellings.

December, 1951, and comprised a 66 in. mill with a capacity of 800,000 to 900,000 tons per annum. The unit comprised a slabbing mill capable of rolling 15 ton ingots and a continuous train of four roughing stands and six finishing stands. The cold reduction mill, completed in 1950 is over one hundred miles away at a site near Paris, which with its car industry is the principal centre of demand for cold rolled sheets.

The second continuous wide strip mill has been built by Sollac in Lorraine to roll sheets up to 80 in. in width, with an annual capacity of 1,000,000 to 1,200,000 tons. This mill, with a five stand tandem cold reduction mill has recently been undergoing test, whilst an additional three stand tandem mill will be ready for operation in the first half of 1953.

A number of smaller projects also aimed at increasing the output of flat products include the construction of two 4-high cold reversing mills for tinplate, completed in 1951. A 2-high reversing train, two 4-high mills and a Sendzimir mill for car body sheets, a Sendzimir mill for stainless sheets, and a 4-high tinplate mill are still under construction. To overcome the shortage of heavy plates a new 4-high mill will be ready for operation this year.

The output of flat products has doubled compared with the quotas of the pre-war days, and the relevant table is interesting from the clear picture it presents of the changed pattern of French production since that time.

Other rolling equipment completed in 1951 included a slabbing mill, a blooming mill and a section mill, together

Cost of the two wide strip mills has been included in the total, and the final estimated cost of these units will be £120,000,000.

IRON ORE AND COAL

Parallel to the development of the iron and steel industry, an increase in the productive capacity of the iron ore mines was considered necessary. It was planned to raise ore output from the 1938 level of 33,000,000 tonnes to approximately 40,000,000 tonnes by the period 1952-1953. This quota would leave a considerable tonnage available for export, and the output quoted was achieved in 1952. Modernization was concentrated in the Lorraine Basin, an area which accounts for more than 90 per cent of the nation's output.

Total expenditure on iron ore development to the end of 1951 is estimated at some £21,400,000, or nearly 75 per cent of the total amount envisaged. This expenditure has been financed mainly from the resources of the companies concerned, mostly subsidiaries of iron and steel firms, although some of the cost has been met by loans from the Modernization Fund. This particular expenditure totals approximately £2,400,000.

In so far as coal is concerned, the original production target of 65,000,000 tonnes to 70,000,000 tonnes set in 1946 was later reduced to 60,000,000 tonnes, but the ultimate aim is to reach 65,000,000 tonnes. Coal production reached 55,000,000 tonnes in 1951, and 57,400,000 tonnes in 1952.

Symposium on Underground Diesels

This article is condensed from papers read at a symposium on underground diesels, which formed part of the proceedings of the technical sessions, annual meeting of the Mines Accident Prevention Association of Ontario, Canada, held last year. To date, the so-called regulations governing the operation of diesel engines underground are tentative requirements set up by the Chief Inspector of Mines, as conditions for issuing exemption to Rule 41 (a) Section 162 of the Ontario Mining Act. This Rule forbids the use of a diesel engine underground at an Ontario mine unless permission is first obtained from the Chief Inspector. The reason for refraining from setting up rules under the Act is to allow changes in requirements as experience justifies. This aspect of Ontario mining legislation was pointed out in a paper by Mr. W. E. Bowden, Assistant Chief Inspector of Mines, Ontario, and naturally has a direct bearing on other papers read at the symposium. A list of these tentative requirements has been compiled and is subject to alteration in specific cases. There are 15 basic requirements, and it is felt by the authorities concerned that if they be followed, there should be no hazardous condition in mine ventilation set up by the engine in the atmosphere caused by the operation of the engine. Aspects of Quebec legislation are also presented.

Mr. D. A. Ramsay, Safety Engineer at Falconbridge Mine, Ontario, said that at the Falconbridge property no serious problems had been presented by a utilization of underground diesels. The ventilation at Falconbridge is obtained by drawing air down through fill pit openings over the east sections of the mine, passing the required amounts through working stopes, and drawing off contaminated air as necessary on the various levels through a return air raise. The main fan, capable of moving 110,000 c.f.m., is situated on the top of this raise.

The diesel chosen was a Ruston and Hornsby, 6 ton, size 40, Class DLU, 36 b.h.p. with a three-cylinder four-stroke Mark 3 VRHL engine. This was installed on the 1,000 ft. level on a backfill tram. Maximum haul on this particular run is 2,500 ft. with a grade of 0.33 per cent against the load, and trackage consists of 30 lb. rail on 24 in. gauge. It is felt, however, that 30 lb. rail is too light, particularly on curves, although track maintenance costs compare favourably with battery motor operations under similar conditions.

Department of Mines tests were conducted on surface before the diesel was transported underground, and again in the mine, by senior officials of the Department. The minimum ventilation requirements are 75 c.f.m. per b.h.p. and Falconbridge engineers have been able to keep well above this amount by exhausting 6,000 c.f.m. through the 1,000 ft. level. There are local variations, however, as in some cases 12,000 c.f.m. are moved, while in others a minimum of 3,500 c.f.m. are moved. Additional fan provision had to be made in only one area.

THE FUELLING STATION

The fuelling station for the unit was constructed at an approximate cost of \$300. The installation is situated in the cross-cut of the main ventilation exhaust raise, and cement piers and a steel beam with an air cylinder are available for any major repair work, owing to the fact that a service pit was not permitted. Metal trays were fitted between the track rails to drain crankcase oil. In addition, the station is designated as a fire hazard area and is equipped with a 20 lb. dry-chemical fire extinguisher, while outwards opening steel fire doors permit complete and rapid sealing. Finally, a certificate from the oil company certifies that the oil used should not fall below a flash point of 140° F. and that the sulphur content may vary between 0.35 and 0.50 per cent, but should not exceed the maximum of 0.50 per cent. Mechanical inspections are made daily and ventilation is surveyed weekly, tests for carbon monoxide being made with a Hoolamite and Colorimetric detectors. At no time have readings approached the allowable maximum.

The presence of aldehydes and oxides of nitrogen is in proportion to carbon monoxide content, and hence tests for the latter gas are all that are necessary.

In the costs analysis of underground diesel operation at Falconbridge, an attempt was made to compare the performance of the diesel with that of the battery locomotive which would have been used under ordinary conditions. Operating

costs for the battery locomotive stand at \$2.26 per 8 hr. shift, while operating costs for the diesel per 8 hr. shift stand at \$1.47. The comparison is not conclusive owing to tonnage and relative operating speeds of the two units.

In conclusion, Mr. Ramsay pointed out that experiences at Falconbridge Mines indicated that the diesel has a definite place in underground work which is limited only by the ability to ventilate mines. He mentioned four drawbacks to be: (1) The difficulty of transporting the unit by cage from level to level; (2) The existence of Government regulations which permit use only in specified and approved locations; (3) The exhaust fog produced in humid atmospheres, although this apparently has no harmful effects; and (4) The apparent necessity for heavier rails and resultant higher costs. He emphasized that if diesel manufacturers wished to deal with the mining industry, they should accept the onus of experimentation and adaptation to mine conditions.

DIESEL OPERATION AT NORANDA MINE, QUEBEC

In 1950 the management of this property could foresee a haulage problem which would involve movement of 800 tons of rock through a single track haulageway 5,000 ft. in length during a time period of 6½ hr. To accomplish the task, two types of power haulage were considered, trolley locomotive and diesels. A diesel was finally selected.

Up to that time diesel locomotives were forbidden underground by the Mining Act. The Quebec Department of Mines was consulted, and stipulated that before use could be made of diesel locomotives underground the following regulations must be met: (1) The locomotive shall be operated only in a well ventilated haulageway where a minimum of 10,000 cu. ft. of free air per min. is supplied at all times; (2) The locomotive shall be equipped with an approved type of scrubber and filter; (3) The carbon monoxide content of the exhaust gases shall not exceed 0.25 per cent by volume; and (4) The operator shall maintain a log book in which, at least once a shift, shall be recorded the carbon monoxide content of the exhaust gases, the free air supply in terms of cu. ft. per min., and the time of each change of the solution in the scrubber. These requirements were incorporated into the Quebec Mining Act, and it was possible to meet them at Noranda.

Mr. D. G. Rowe, Safety Engineer of the property, pointed out these details when he presented this paper at the symposium. He related that an order was placed with a British manufacturer for an underground diesel locomotive, which was placed on light duty in November, 1951.

The locomotive is rated 68 b.h.p., 13 ft. 9 in. overall length, 3 ft. 4 in. overall width, 5 ft. 3 in. overall height above rail and comprised a total weight of 10 tons. The four-cylinder engine is equipped with an exhaust conditioner but not a flame arrester, and a special reduction gear was specified for the engine to give a maximum speed of 10 m.p.h. Rated speed at full load is 6½ m.p.h. There is a pneumatic braking system.

The unit operates in a heading 8 ft. wide by 9½ ft. high with a grade of 0.4 per cent in favour of the load. Track

gauge is 24 in. and rails weigh 45 lb. per yard. The two curves in the haulageway have a 200 ft. radius of curvature, and the locomotive travels between a single loading point and a single dumping point. A diesel garage has been constructed underground as a fireproof structure, where a 10 lb. CO₂ fire extinguisher and a Burrell mask are maintained. There is a 2½ lb. CO₂ extinguisher mounted in an accessible position on the engine hood.

Ventilation air is supplied by a 44 in. diameter centrifugal fan delivering 25,000 c.f.m. of air directly into the haulageway. Approximately 20,000 c.f.m. traverses the entire length of the haulageway from the vicinity of the dumping point to the loading point before exhausting through a shaft and sundry mine workings to surface. Air volume in the haulageway is measured with an anemometer at the same location each shift by the locomotive crew and shows an average of 287 c.f.m. per maximum b.h.p.

The engine exhaust is conditioned in two ways. First, an alkaline water solution is injected in the form of a fine spray into the exhaust pipe immediately it leaves the manifold. The exhaust gas then passes through a scrubber box filled with alkaline solution before exhausting to the atmosphere. The alkaline solution is mixed in the diesel garage by adding 6 or 7 lb. of commercial soda ash to 100 gal. H₂O.

The carbon monoxide content of the exhaust gas is measured each shift, an M.S.A. hand-operated CO indicator being used for the purpose, and after 3,400 miles of operation on light load without an overhaul the CO readings varied from 0.010 per cent to 0.020 per cent. It was found that perhaps the most important factor in the maintenance of a low CO content in the exhaust as well as a low aldehyde odor is a frequent and regular cleansing of the conditioner box. Cleaning and refill with fresh solution reduces CO content by 0.002 per cent.

QUEMONT MINES TO WAIT AND SEE

Mr. W. A. Hoffman, Supervisor of Research and Development at Quemont Mines in Quebec, emphasized at the outset of his paper that the company would welcome a change in the provincial regulations governing the use of diesels underground only after sufficient experience had been gained for the Quebec Department of Mines to know that altered regulations were in the interests of safety.

The particular severity of winter conditions was taken into account by the company when all aspects of ventilation were studied before diesel haulage was installed underground. The provincial regulation demanding 10,000 cu. ft. per min. of free air presented particular difficulty in the case of Quemont Mines, as the workings generally provide some half-dozen large tonnage long hauls which are intermittent. Owing to the severe winter of the area, the cost of preheating the property's total intake of 175,000 c.f.m. of air for a four- to five-month winter period would prove prohibitive. Even after reducing the volume by almost 50 per cent further measures must be taken to counteract the extreme of climate, which include heating and insulating water lines opposite the fresh air intake splits, and recirculating a proportion of warm mine air. This air, at 70° F., is the result of backfill heating, and a mixture that gives no freezing is a 30 per cent warm air mix with 70 per cent cold air.

The diesel haulageway which is efficiently operated in summer provides additional problems during winter, when little more than half the air volume of summer is available for distribution. Therefore on the Quemont property, the diesel locomotive underground is limited to specific drifts and cannot be run about the level indiscriminately.

It is considered at Quemont that the Quebec provincial regulations governing the use of diesel locomotives underground are not exacting enough as to the quantity of air required for diesel operation. It is thought at the mine that the quantity necessary for a safe operation is directly pro-

portional to the h.p. of the unit and it is certain that the fuel consumption is directly related to the h.p. and piston displacement. For different sizes of engine the average consumption of fuel is one gallon for each 10 h.p. of engine output over an eight-hour shift. This statement is the result of tests by separate engine manufacturers and has been borne out by experience gained with the 36 h.p. machine in operation at Quemont.

The Health and Safety Division of the U.S. Bureau of Mines, after numerous tests and analyses of underground air where diesels are working, has concluded that 75 cu. ft. of air per min. per b.h.p. is required for each diesel. This must be virtually normal air and is a minimum quantity, in addition to that required for normal ventilating purposes, when no diesel is operating. The speaker understood that in Europe, air requirement was based on the h.p. of the locomotive and the number of locomotives on the haul. Thus if this minimum requirement were doubled to 150 c.f.m. per h.p. the 36 h.p. machine operating at Quemont would require 5,400 c.f.m.

Two other questions arose after consideration of the Quebec regulation. First, under present regulations would the identical air requirements cover a machine of 200 h.p. which produces much more exhaust gas than does the Quemont 36 h.p. unit? ; and second, would two or even three diesels on a single long haulage not require double the quantity for two and triple the quantity for three machines of the same h.p.?

The 36 h.p., six-ton machine used in the mine has a speed range of from 2 to 10½ m.p.h. in forward and reverse gear. With 1,300 lb. drawbar pull at an average speed of 6½ m.p.h. it can handle twice the load that can be hauled by four-ton battery locomotives in use, and at a slightly increased speed. On a recent trackfilling operation the unit hauled 60,000 tons of fill during a two-month period at a cost of 3.9 c. per ton, the cost being made up of train crew labour, daily maintenance, fuel, lubrication, scrubber solution cost and a proportion of the periodic overhaul costs. It is a direct cost that does not include writing-off capital expenditure.

Mr. Hoffman emphasized diesel operator training in his concluding remarks. It had been the experience of the Quemont management that the choice of operators, and their training, should be more thorough and careful for diesel operation than for battery locomotive work. This aspect had been considered from the points of view of both safety and maintenance.

A DIESEL POWERED SHUTTLE CAR

The Caledonia Mine, Ontario, of Gypsum, Lime and Alabastine, Canada, Ltd., produces 600 tons of gypsum rock per day from an 8 ft. thick seam 75 ft. below the surface. The room and pillar method is used and the footwall is firm and even, and therefore suited to trackless mining. In presenting a paper on a diesel shuttle car used on the property, Mr. G. R. Hunt, Mine Superintendent of the Caledonia mine, said that rising costs with increasing underground haulage distance forced the company to change its method of loading and transporting rock. A Joy No. BU electrically powered loader and a Joy No. 60E12 diesel electric shuttle car were put into operation during February of last year.

The introduction of trackless haulage by diesel powered shuttle car has improved safety and reduced costs in these operations, and has brought about much better ventilation in all of the underground workings. A considerable reduction in accidents was anticipated, because approximately 50 per cent of mine injuries were incurred by the former method of horses and three-ton cars on rails.

The car has a three-cylinder, two-cycle diesel engine with an exhaust conditioner of 15 gallons capacity for one shift and with a 45 gallon make-up tank. The exhaust conditioner or scrubber removes aldehydes and the oxides of

nitrogen and sulphur, its solution being 12.5 lb. aqueous sodium sulphite, 0.6 lb. hydro quinone, and 15 gallons of water. The engine is equipped with a high and low speed governor. Overspeeding of the car is not advisable as the traction motor armatures are turning at 5,000 r.p.m. when the car is travelling at 8 m.p.h.

With a total b.h.p. of 82.3 h.p. per unit, the mine's requirements of moving air amounted to 6,200 f.p.m. To ensure safe working conditions, another air delivery shaft with fan was requested to deliver a minimum increase of 20,000 c.f.m. to the mine. A report from the Assistant Chief Inspector of Mines for Ontario and the Safety Director of the Mines Accident Prevention Association of Ontario advised the sinking of a ventilation shaft, and pointed out weaknesses in the brattice structure.

At distances safe from blasting, the brattice was built of cedar shiplap on posting although nearer the blast 3 in. elm planking was used. Haulageway air movement showed between 11,000 and 14,500 c.f.m., and the new air shaft brought an additional 22,000 c.f.m. When the diesel was

first started up underground, the engine was raced to build up the generator delivery, and a tremendous amount of smoke was discharged. However, provincial department engineers pointed out that the brattice needed additional caulking, and that the existing booster fan underground should be operated in conjunction with the unit on surface.

The fan was started immediately, the brattice was covered with scutan (water proofed) paper and the edges caulked with asphalt putty. The readings climbed to 28,500 c.f.m. to 29,500 c.f.m. and even higher, until the smoke from the diesel exhaust was no longer noticeable.

Diesel fuel consumption costs 0.79 c. per ton of rock hauled the 2,850 ft. from face to station. The machine makes 120,000 ton-ft. per hr. and burns 1½ gallons of diesel fuel oil per hr., and the simplicity of trackless mining of this type has greatly reduced accident hazards.

The former system of haulage which entailed the use of horses and track, accounted for 11 out of a total of 20 accidents requiring medical care during 1951, and for 168 of a total of 186 manshifts lost due to accidents.

Recovery of Bismuth from Refinery By-Products

By C. C. DOWNIE

In the following article the author prefaces his remarks by pointing out that the production of bismuth from by-products differs in form from the methods obtaining in respect of rich bismuth ores. He gives note of various refining methods, and emphasizes that to form a true criterion of recovery on a large scale, improved electro-refining methods must be studied.

The production of bismuth from the byproducts which accumulate in large metallurgical undertakings, represents a form of industry differing materially from that which obtains in works where rich bismuth ores are dealt with in the ordinary way. Minute amounts of bismuth in small lead and antimony refineries are more or less ignored, and frequently range from 0.2 to 0.4 per cent and even less.

Such contents are considered of little account in so far as ordinary commercial pig-lead or "star" antimony are concerned, and the refining proceeds in the normal way to the final pouring of the finished metal. In other directions, not a few zinc smelteries pay little attention to the minute bismuth content remaining in the retort residues, which is sometimes less than 0.1 per cent, but when the silver content amounts to 20 ounces per ton upwards, these materials are usually sold off for what they will fetch. From the ultimate electro-refining of silver, the bismuth may or may not be reclaimed, depending on the total which has so been concentrated, but as a general rule in this country, it is ignored from this particular source. In the copper refinery bismuth is regarded as poison, as the physical properties of the metal can be ruined by its presence, and where the pyro-refining system is still persevered with, special patented alloys added at the concluding stages are claimed to remove this impurity. From sources such as burnt pyrites, the bismuth as originally present in the raw material is somewhat scattered throughout different byproducts, and in the precipitated copper should not exceed from 0.03 to 0.05 per cent. Prior to the introduction of the foregoing method of bismuth removal, copper precipitate which contained upwards of 0.06 per cent was considered unfavourable for reverberatory furnace refining. With the ever-increasing popularity of electro-refining of copper, more attention is now being given to a small source of bismuth which formerly was ignored. Thus in order to gather a true criterion of the recovery of bismuth in the really large metallurgical layout, one has to study the various improved electro-refining methods as used for the different individual metals, which accumulate this metal in the anode slimes. The only exception is zinc retort residues, which are sometimes smelted with other residues to give a crude lead alloy, and which is

"cleaned" and added to the lead which goes to electro-refining.

Apart from galena, blende, calamine, stibnite, and copper pyrites, and other regular ore sources, scrap material known as "secondary metal" and largely hailing from disused automobiles, occupies an important category. This is included in the charges smelted, mainly in the large converters, where the zinc, tin, and lead are largely burnt off and pass to the fume, while the copper enriches the existing matte. During this blowing, unlike the slow oxidation which exists in lead cleaning, a fairly large proportion of the small bismuth content passes to the fume, while the remainder collects in the copper.

When this copper is ultimately electro-refined, it is free of bismuth, but the electrolyte retains up to 0.03 per cent, and the anode slimes sometimes up to as much as 0.9 per cent bismuth. The fume, from which the zinc content is extracted for lithopone production, leaves behind a residue of lead, tin, antimony, and a variable number of points per cent bismuth. This residue is reduced to metallic condition, cast as anode plates, and electro-refined using a method suited to the particular composition. Thus, if it is mainly a lead alloy as is usually the case, it is electro-refined to give pure lead, leaving behind tin, antimony, and 1-2 per cent bismuth in the anode slimes. These slimes in turn are melted, cast as anode plates, and electro-refined to give pure tin, leaving behind antimonial-bismuth slimes.

ALTERNATIVE BISMUTH BY-PRODUCTS

The anode slimes from copper refining require more complicated treatment as they frequently contain upwards of 50 per cent silver, besides 10 to 14 per cent copper, up to 6 per cent antimony, and innumerable other constituents in smaller proportions, including selenium and tellurium. These, together with other similar residues but usually richer in copper, are subjected to roasting and dissolving in concentrated sulphuric acid. The residue is transferred to the silver department, where any little remaining bismuth is slagged off, while the copper solution in contact with fresh copper plates leaves behind a metal and oxide mixture, which, as a rule, rarely contains less than 4 per cent bis-

muth, and usually much more. After reducing to metallic condition, this composite-bismuth alloy is transferred to the bismuth refining department.

ALTERNATIVE TO THE BETTS PROCESS

Reverting to the lead as refined and cleaned, this was for many years subjected to the Betts process whereby, as before, the 0.2 to 0.4 per cent bismuth is accumulated in the anode slimes, and it is thereby enriched to from 10 to 20 per cent. The slimes here are reduced to metallic condition for silver electro-refining producing a concentrated bismuth residue. Although this method is still persevered with, a short-cut is now taken advantage of where the material is rich in bismuth and not too rich in silver, namely, the production of white-lead directly from the impure lead anode. In other words, where the lead is highly argentiferous, the Betts process is used, but where poor in silver it is converted to white-lead. It was this feature which aroused attention to the dual advantages of the system, since previously pure lead only was employed to ensure a good quality of pigment. While this system ultimately gives the highest grade of bismuth suitable for pharmaceutical purposes, the other bismuth concentrates from the foregoing processes are pyro-refined to a crude metal which is subjected to chlorine refining, and which suffices for all ordinary commercial purposes. This will be better understood when it is mentioned that electrolytic bismuth rarely contains more than 0.001 per cent of total impurities and usually contains a much lower percentage, and comprises mainly iron and silver. The other constituents, copper, lead, antimony, tellurium, and gold, if any, only exist as traces. No such absolute purity is essential for bismuth for the manufacture of fusible alloys for boiler plugs, dental purposes, and the pigment and ceramic industries, etc. For these uses, the crude lead-bismuth alloy, which may contain variable percentages of copper, zinc, iron, antimony, and the like, is first melted in a scorifying hearth, and subjected to a powerful air-blast. The hearths are usually either of 4 or 6 cwt. capacity, and are lined with a mixture of fireclay and limestone, corresponding to some extent to the "test" hearth used for silver cupellation.

There is no point in working the process in this manner if the resulting metal contains any appreciable silver.

REFINING BY OXIDATION AND CHLORINATION

When molten, the air-blast from a positive blower causes the zinc and iron to oxidize and join the litharge formed freely, but the copper with more difficulty, usually requiring the addition of extra lead plates. As distinct from silver cupellation practice, however, the presence of appreciable copper contents does not permit any initial liquation as a means of prematurely getting rid of this constituent, since it alloys with the bismuth, and more or less offsets this means of separation. Hence the period of scorifying is simply extended with addition of more lead, until the litharge which comes off shows little more than one or two points per cent of copper, and sometimes less. The period of oxidation is always extended where antimony and arsenic exist even in small quantities, while tellurium never appears to be completely oxidized, as part of it is to be found in the bismuth. Although melting at some 269° C. bismuth does not boil until 1,450° C. and allows the temperature to be maintained at the necessary high degree to facilitate removal of impurities generally. The molten mass is simply ladled into fireclay pots some 10 in. in height and 5 in. in diameter, with lids which have a slit in them to allow of sliding them over the pot without shifting a chlorine pipe. In one arrangement, the chlorine pipe stem used is 24 in. long, and $\frac{1}{4}$ in. internal diameter, although $\frac{1}{2}$ in. diameter pipes are also employed. To facilitate escape of the chlorine, when resting on the bottom of the pot, the pipe is wedge shaped, and at the further end is connected (by a

rubber junction to a glass stopcock, or alternative arrangement) to a chlorine cylinder. Although the specific gravity of bismuth approximates to 9.8, the gas is not made to pass to the actual bottom, and the fireclay pot is placed in an inclined position, while the rotating action causes all sections of the molten mass to be brought into contact. It was formerly the practice to dry the gas by passing it through concentrated sulphuric acid, but this has since been abandoned as unnecessary. During chlorination, iron comes off separately, depending on the temperature used, while the remaining constituents, zinc, lead, copper, and antimony, do not always necessarily come off in this order. Insofar as the bismuth is concerned, they are all got rid of in a matter of from 1 to 1½ hr. chlorination, when dealing with pots containing some 45 lb. charges.

Little if any silver is removed, as bismuth chloridizes before silver, and hence the reason for working silver-free material. In order to forestall the possibility of spitting, the stream of chlorine is admitted slowly at first owing to the presence of air. Towards completion of the operations, the flame issuing from the slit in the lid becomes small, and alters in appearance, frequently showing a luminous tendency, when the current of gas is reduced but allowed to continue to pass in for another 15 min. The heating is continued for a few minutes more simply to dispel surplus gas, when the contents are poured into flat moulds, and when cold the metal is immersed in dilute sulphuric acid, and then hot water, when it is ready for the market. By chlorination, the total impurities left in bismuth, i.e., copper, antimony, iron, and tellurium, with silver, rarely exceed 0.01 to 0.02 per cent and with careful selection of the raw material, seldom includes more than 1 oz. per ton of silver.

ELECTRO-REFINING METHODS USED

The silver-bearing bismuth-lead alloys may contain anything up to 150 oz. per ton silver, and 30 oz. gold, besides 2 to 4 per cent of both copper and antimony, and smaller amounts of arsenic, sulphur, tellurium, and iron. Such alloys are essentially lead compositions, in which the bismuth has accumulated from innumerable sources. In the electrolytic production of white-lead using diaphragm cells, all bismuth and silver are retained in the anode slimes, while the corroded lead, in acetate condition, is converted to a mixture of lead carbonate and hydrate, and this is continually removed from the diaphragm for filtration, leaving the electrolyte for re-cycling through the process. The anode slimes, by concentrating the silver in this manner to +1,000 oz. per ton, are left sometimes with little more than 3 per cent lead, and are well suited for electro-refining to the purest form of bismuth. This was formerly done in an acid bismuth chloride electrolyte containing 10 per cent free hydrochloric acid and 7 per cent bismuth, with current applied at 18 amp. per square foot of anode surface, but some lead and silver entered the deposited bismuth. To-day, by substituting a fluosilicate electrolyte, lead passes into the solution, while silver remains undissolved in the slimes.

One electrolyte used contains 8 per cent free hydrofluosilicic acid, and 6 per cent bismuth, to which proprietary agents are added in place of the 0.1 to 0.2 per cent gelatine formerly used, with current applied according to the purity of the anodes, but which is usually between 13 and 16 amp. per square foot. This is claimed to give bismuth containing within 0.001 per cent of total impurities, and the metal is finally melted under a light layer of flux, and poured into moulds made of a paper composition, when the product is passed to the market. While a number of fusion methods followed by wet extraction have been used elsewhere for dealing with rich bismuth ores, the foregoing systems represent what is done for handling bismuth byproducts in large metallurgical corporations.

TECHNICAL BRIEFS

Chromium Treatment For Water Valves

Amongst the many applications of electro-chemical deposition of chromium to prevent corrosion and undue wear is the treatment of water valves and similar components. Thus, in the latest design of Newman-McEvoy automatic lubricant conduit gate valve, which has many interesting features, the gate and seat sealing surfaces and valve spindles are "Fescol"-ized in chromium to reduce corrosion and pitting.

In the automatic lubrication system uncontaminated lubricant is stored in a cylindrical reservoir in the valve seat. Line pressure acting on a piston in the reservoir forces lubricant into two circular full port grease grooves (one between gate and one between seat and body) to stop any leak that occurs.

In addition to the high degree of protection against corrosion, another important advantage is that the extremely low coefficient of friction for chromium against chromium means that the valves are even easier to operate, and galling is eliminated. Dual lubrication systems and non-wedging design allow perfect operation with either end of the valve downstream. Thus, the valve may be installed either way and flow may be reversed without reversing the valve, while the heavy independent seats remain perfectly flat regardless of body distortion.

The principle of depositing a layer of one metal on another of such thickness and so intermingled that separation is impossible was evolved by Fescol Limited, North Road, London, N.7. Chromium and nickel are the two most suitable metals for general industrial purposes, and each of them has a very wide range of application.

In its early stages, the "Fescol"-izing was employed almost exclusively as a means of repair, by replacing worn material, but it was soon realized that the principle was equally valuable for the treatment of new equipment, to give protection before being put into service. In this latter connection, a deposit of only a few thousandths of an inch is normally sufficient to provide very considerable protection to unworn surfaces. In salvaging worn or corroded parts the exact nature of the deposit naturally depends on the amount of wear that has taken place, but any reasonable thickness can be built up. When the wear is excessive, the usual practice is to provide an initial deposit of nickel and finish with chromium.

The firm, in addition to physical and analytical laboratories equipped on the most scientific lines, have a research plant for investigating all types of industrial application, and their wide experience places them in a unique position as regards solution of the many problems due to corrosion.

Metals Saving by Addition of Boron

Boron, a hard grey element which is present in boric acid is added in very small quantities to steel in order to save chromium, nickel, and molybdenum, according to a report published recently in *Steelways*. So far, this year, it has been used in as many as 70,000 tons of steel per month in order to save large quantities of those important alloying elements. Boron contributes to "hardenability," which is the depth to which a piece of steel can be hardened by heating and quenching.

The United States owns 95 per cent of the world's supply of boron. In adding this element to steel, the contents of a wheelbarrow full of ferrobore—a shiny rock—is added to the ladle holding 150 tons of molten steel; and it saves almost 2.5 tons of nickel, 0.75 ton of chromium, and nearly $\frac{1}{2}$ ton of molybdenum. Since boron is easily oxidized, and thus loses its effectiveness, it must be mixed with other substances, such as silicon or, perhaps, vanadium or aluminium.

For a steel of a given hardenability, the table below shows how the percentage of alloying elements can be reduced by adding boron:

Metal	Without Boron	With Boron Added
Nickel	2.0	0.4
Chromium	0.9	0.4
Molybdenum	0.4	0.1

It is claimed in some metallurgical circles that more distortion results after heating and quenching in application of boron steels. On the other hand, the response is given that

distortion, with the use of boron is more uniform and predictable than in other cases. The effects of boron are not apparent until after the steel, given its final form in a state that is easy to machine, has been treated by heat.

A Low-Power Nuclear Reactor

An inexpensive, low-power nuclear reactor, unique in that it is submerged in water in order to protect operators from radiation, has been developed by scientists at Oak Ridge National Laboratory, and is operated by Carbide and Carbon Chemicals Corporation, America, according to a report in *Mechanical Engineering*. The reactor is the central feature of a bulk shield-testing facility which is used for experiments to aid development of improved reactor shields. The reactor is submerged in a pool of water 20 ft. deep, 20 ft. wide, and 40 ft. long, in which it can be moved about. The entire facility was constructed for less than \$250,000, exclusive of fuel. The reactor core itself cost only \$58,400. The remainder of the cost was for concrete work, the building, and auxiliary equipment.

This "swimming-pool reactor" has a continuous full-load power rating of 10 kilowatts, at which it produces a maximum flux, or neutron density, of approximately 100 billion thermal neutrons per square centimeter per second. It is an assembly of movable fuel elements placed on end in an aluminium grid and is suspended by an aluminium framework from what is called the reactor bridge, which spans the pool. The reactor can be moved along a centre line the length of the pool. Similarly, an instrument bridge spans the pool and operates on the rails.

Very useful is an aluminium gate, 12 ft. high and 21 ft. long, and 10 ft. from the south end of the 130,000-gallon pool. When the reactor is moved to this end of the pool, the gate can be lowered, and the greater area of the pool can be blocked off and pumped dry for repairs and adjustments, while the placing of shielding samples in desired spots is easy, with personnel meanwhile protected from radiation.

Centred on the bottom surface of the pool is a well, 14 ft. square and 5 ft. deep. This well is filled with removable blocks of high-density concrete, giving an adjustable floor level for more flexibility in the placement of shielding samples and instruments. The reactor has a variety of potential uses in addition to its principal role as an aid in the testing of shields. It enables students and other investigators to perform critical experiments, to study neutron distribution, and—within limits—to study the effects of reactor operation of various patterns of arrangement of the fuel elements.

Metal Alteration by Electronic Hammer

Electronic work-hardening of metals by means of an electronic hammer may become quite common by means of a "Statitron," which, unlike the Cyclotron, does not smash atoms but rather displaces them. It is hence capable of changing the physical properties of a piece of metal, as reported in *Steel*.

The new machine was developed in the Downey plant of North American Aviation Inc. An endless insulated belt, travelling at 3,000 ft. per min., conveys electrons to the top of the Statitron where they are stored on the metallic dome, building up a tremendous accumulation of charge. When released by a hot filament, the accumulation gains speed down an evacuated accelerator tube. About 60 thousand billion electrons per sec. strike the experimental target at the base of the tube, with a speed of travel which is approximately that of light—186,000 miles per sec. The atoms in the metal are hit with such force that they are displaced, the metal being put in the same condition as that which occurs with work hardening.

The Statitron produces no radioactivity, but it does emit a very dangerous radiation background of several million times that which is considered to be tolerance for the human body. In fact, these radiations are very hard X-rays, which are capable of taking interior pictures of very heavy steel samples—such as a piece of steel 2 ft. in diameter. Because of this radiation, the walls of the Statitron room are very thick concrete and the door is of heavy lead. The building is electrically interlocked, making it impossible for the generator to be turned on when any one is in the room.

METALS, MINERALS AND ALLOYS

Last week's announcement that the American government had abolished the remaining controls on metals was received with acclamation by the trade, which regards controls as an abomination to business. The general situation is considered a favourable opportunity for the change; with production in reasonable balance with consumption, rearmament reaching its maximum gait and the appearance generally of a buyers' market. This week the President and Congressional leaders are stated to have agreed that the R.F.C. will finally go out of business on June 30 next year in accordance with the time scheduled in the present law, and will start winding up at once.

The resumption of trading in copper futures on the New York Commodity Exchange is looked for shortly, as soon as a new copper contract has been approved.

There remains the question of the outstanding contracts, especially for tin, believed to extend into 1955 or even later, and it seems expected that the execution of any such residues will be transferred to the Department of Commerce. The Committee of the International Materials Conference is to be dissolved at the end of the month, as the need for it, it is said, no longer exists.

COPPER.—All copper available for April delivery in the U.S. is said to have been absorbed up to a price of 34 c. but so far there has only been a fair demand for foreign copper over 35 c. Phelps-Dodge has now raised its refining price for domestic material from 28½ c. to 30 c. and for Customs Smelter copper from 32 c. to 33 c.

U.K. Secondary copper refiners have been given permission to export fire refined copper under licence. Present indications of prices are around £242 per ton for 99.5 per cent metal, and £240 for 99.50 per cent, both f.o.b. Sterling copper shipments to the Continent are now reported at £265-£275 per ton (£275-£285 previously). Starting on Thursday the U.K. price for electro has been reduced to £280 per ton.

The strike of European miners at the Nkana mines came to an end on Friday of last week, after lasting 2½ days. It was called off pending resumed negotiations between the European Workers Union and the management. No date has apparently been fixed for a resumption of these negotiations. Shortage of coal is also again hampering operations.

Following the resumption of work under government orders at the Chucucamata mine in Chile, the workers are sending a delegation to Santiago to try and effect a definite solution of the current dispute. A new Ministry of Mines has been established to co-ordinate Chilean mining activities. The idea that this is a first step towards nationalization of the mines is deprecated as mere speculation.

Kennecott's production last year was 629,394 s.tons; of the total production, 444,158 s.tons was from domestic and 184,812 from Chilean sources, against 430,186 from domestic and 176,247 from Chilean in 1951.

The African Metals Corporation, sales agent for the Union Minière, has announced that Belgian copper will now be available to American consumers. The amounts available are expected to be from 2,000 to 3,000 tons a month; shipment either from Antwerp or Matadi.

Sales of copper in South Africa are reported by the Department of Mines as 37,606 s.tons as against 38,553 in 1951.

LEAD.—[Latest reports from New York say that lead is in good demand with the undertone of the market basically stable.

TIN.—Principal interest in tin this week centres on the meeting of the Tin Study Group in London, which is attended by 13 member governments, including the United States, represented by 55 delegates. It is stated that the meeting will make a thorough review of the world's statistical position and probable future demands. The Group has now revised its figure of world production of primary metal last year to 170,500 tons. The Scientific Director of the American Can Company, Dr. B. S. Clark, told the Institute of Food Technologists last week that 287,000 tons of tin have been saved in the U.S. since 1941 through the co-ordination of the industry and government research in tinplate conservation. The average coating per base box had been reduced from 1.21 lb. to .598 lb. last year.

Output of tin in Malaya in February was 4,307 tons compared with 4,998 tons in January, and 4,226 tons a year ago. The Indonesian output for February was 2,142 tons (2,544 in January), and that of the Congo 917 tons (1,257).

The Bolivian government states that it cancelled its contract with the Chacur group to construct a tin smelter and other undertakings because the group failed to carry out the terms of the contract. Discussions between the governments of United States and Bolivia were resumed last week. The principal question is believed to have referred to the nationalization of the tin mines in Bolivia.

ZINC.—There has been a rather firmer tone in zinc with good demand noted in New York for all grades. The recent action of the G.S.A. in buying Prime Western for the stockpile has apparently reassured the market that prices will not be allowed to go down further. Special high grade has been particularly in demand. The U.S. Bureau of Mines estimates consumption last year at around 1,130,000 s.tons, 5 per cent down on the year. U.S. stocks continue to grow and were 58,949 s.tons at the end of February against 52,760 at the end of January and 43,650 at the end of December.

ALUMINIUM.—At a symposium of the American Secondary Metals Institute last week great optimism was expressed by speakers regarding the prospects of further big developments in production and consumption of the metal. U.S. output last year was given as 937,000 s.tons and should rise to around 2,000,000 s.tons in 1956 with a world output of 4,500,000 s.tons. Mr. E. S. Christiansen, of the Industrial Smelting Corporation, said that as soon as industrialists were assured of full supplies there would be an enormous number of fresh consuming firms entering the industry, and that the growing consumption would be fully absorbed. Aluminium to-day was much cheaper than any of its competitors such as copper, lead or zinc, on a volumetric basis. Aluminium was now 20.5 c. per lb. against 32 c. for copper and brass and was second only to steel in tonnage. It had, in fact, created a revolution in industry.

BISMUTH.—The U.S. Bureau of Mines reports the world production last year at around 3,500,000 lb., virtually unchanged from 1951. Imports into the United States were 708,200 lb. of which Peru supplied 661,800 lb. There was a marked increase in the amount of bismuth taken for the metal and alloy trades and a further decline in the offtake for pharmaceuticals.

MOLYBDENUM.—Despite a reduction in the output of concentrates in the last quarter, 1952 production, according to the U.S. Bureau of Mines, increased to 43,266,400 lb. as compared with 38,855,000 lb. Consumption, on the other hand, declined by a little under 1,000,000 lb. and stocks increased to 6,856,000 lb. compared with 5,057,100 lb. Stocks at the end of the year were 6,856,000 lb. of molybdenum. Production of molybdenum products was slightly lower at 32,382,600 lb. compared with 32,775,000 in 1951.

The U.S. export quota for the second quarter of the year has been announced by the Department of Commerce as 1,800,000 lb. (molybdenum content) for ores, concentrates, ferro and calcium molybdate, 10,000 lb. for metal and alloys, wire, sheets and rods powder and filaments; and 5,000 lb. for reagent grade chemicals.

The International Materials Conference has made its second quarter allocation of molybdenum amounting to 6,736 tonnes. Principal recipients are U.S.A. 5,067 tonnes, U.K. 500 tonnes, West Germany 366 tonnes, and France 345 tonnes. Defence and stockpiling requirements were said to be still in excess of estimated production.

TITANIUM.—Kennecott has stated that its subsidiary, the Quebec Iron and Titanium Corporation, produced 37,626 tons of titanium slag last year, despite the existence of a strike at the treatment plant for nearly two of the eight months of the open season. The demand for titanium slag, it is stated, has grown to a point requiring the utilization of a substantial part of the treatment plant and a significant further demand is expected in the current year.

QUICKSILVER.—The effect of stockpile buying on U.S. prices was once more evidenced when New York prices were advanced \$5 per flask to \$200-203 per flask on Wednesday, when G.S.A. were reported to have purchased about 2,000 flasks. Stockpiling for Great Britain was also anticipated.

Several hundred flasks of Yugoslav quicksilver are said to be on offer to the U.K. at £69 per flask c.i.f. as compared with the standard U.K. price of £69 15s. The London price ex-warehouse is reported at from £70 10s. to £71 per flask. A fair amount of Spanish metal is believed to be afloat for the U.K. and an easier supply position is said to exist there since the conclusion of the big sales to the United States.

WOLFRAM.—There is no change to note since last week. The U.S. price remains a \$40/41 nom s.ton.

Iron and Steel

Throughout all branches of the iron and steel trade an atmosphere of feverish activity has developed this week. Producers have intensified their efforts to achieve the maximum clearance of material from their loading banks before the expiry of the first quarter of the year, and consumers, equally concerned with these late deliveries, have also been busy placing contracts whenever possible to cover their allocation for Period II.

Once again it is affirmed that the total supply of steel is steadily overtaking the demand. Even the output of plates is improving. The Minister of Supply stated as recently as Monday last that the rate of production of steel plate is now 15 per cent higher than in 1950 and he hopes that it may be possible "very shortly" to increase supplies to the shipbuilding industry.

Any increase in plate deliveries will certainly be welcomed by the shipbuilders. The Ministry claims that deliveries during the past year have been "very nearly equal" to the total quantity allocated but the fact is that the allocations were totally inadequate and only a substantial increase will enable the shipbuilders to make full and efficient use of their considerably expanded and modernized facilities.

Though rumours persist of the impending abolition of steel rationing, no official announcement is as yet forthcoming. It may, however, be an indication of coming events that Mr. Duncan Sandys has seen fit to issue an Order with effect from Monday last terminating the statutory control of maximum prices for steel bolts, nuts, screws, and rivets. The makers have undertaken to maintain prices at reasonable levels and it is stated that the overall effect will be a net saving to consumers of approximately £250,000 per annum.

A matter of much wider interest is the all round advance in iron and steel prices which was authorized to absorb the tax on fuel costs. A detailed examination of the new maximum price lists shows that haematite foundry pig iron has been advanced 10s. per ton, basic iron 7s. 6d., No. 3 Scotch iron 9s. 6d., low phosphorous iron 6s. 6d., and refined iron 5s. 6d. per ton.

Manufactured iron prices are unchanged, soft billets are up 8s. per ton, re-rolled products 9s., steel plates, sections and rails 12s. 6d., and black sheets 13s. 6d. per ton. It is claimed that even with these additions British home prices remain below those of the other principal steel producing countries, and it may be noted that the revived European Iron and Steel Export Cartel has decided to increase the export price of steel from Antwerp by about \$5 per ton.

The London Metal Market

The main features in the copper markets have been the slightly weaker tone in Europe and the tendency in the United States for producers to raise the price of prompt copper from non-domestic sources, although it is understood that prices for delivery towards the end of the second quarter are at a somewhat lower level owing to the fact that by then electrolytic copper will be available from the intakes of scrap which have taken place after the removal of ceiling prices.

The tin market has been featureless, but with the announcement that the R.F.C. is to be wound up by the middle of 1954 speculation is rife as to the future of the Texas smelter, and in this connection it is also interesting to note the apparent overthrow of the plan for certain Argentine interests to build a smelter in Bolivia. The Eastern price on Thursday morning was equivalent to £957 per ton c.i.f. Europe.

The lead market has been dominated by the scarcity of prompt metal and metal for delivery against March settlement, and this has caused a widening in the backwardation and helped to keep the price steady. Consumer demand throughout the world is still on a fair scale and most smelters are able to dispose of their intake, so that the technical position is quite good.

The zinc market has been very active, but the rise which took place at the beginning of the week has not been held, and quotations are now slipping back helped by the greater availability of metal for delivery against March settlement. Consumer demand is not impressive, although it is understood that the G.S.A. are prepared to purchase further substantial tonnages of metal on the 11 c. per lb. basis. Continental offerings continue on a small scale, but it is felt that this is due rather to the price level than to lack of supplies.

Closing prices and turnovers for the week are given in the following table:—

	March 19		March 26	
	Buyers	Sellers	Buyers	Sellers
Tin				
Cash.....	£941	£942	£937	£939
Three months.....	£937	£938	£931	£932
Settlement		£942		£938
Week's turnover....		420 tons		235 tons
Lead				
Current month	£90	£90½	£91½	£91½
Three months.....	£87½	£88	£89½	£89½
Week's turnover....		3,525 tons		3,450 tons
Zinc				
Current month	£79½	£79½	£80½	£80½
Three months.....	£79½	£79½	£80½	£80½
Week's turnover....		3,750 tons		5,725 tons

MARCH 26 PRICES

COPPER

Electrolytic £280 0 0 d/d

TIN, LEAD AND ZINC

(See our London Metal Exchange report for Thursday's prices)

ANTIMONY

English (99%) delivered,
10 cwt. and over £225 per ton
Crude (70%) £210 per ton
Ore (60% basis) 20s. — 22s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) £483 per ton

OTHER METALS

Aluminium, £166 per ton
Bismuth
(min. 4 cwt. lots) 17s. lb.
Cadmium (Empire), 14s. 4d. lb.
Chromium, 6s. 5d./7s. 6d. lb.
Cobalt, 20s. lb.
Gold, 248s. f.o.z.
Iridium, £60 oz. nom.
Magnesium, 2s. 10½d. lb.
Manganese Metal (96%-98%)
£280/£295
Osmiridium, £40 oz. nom.
Osmium, £65/70 oz. nom.
Palladium, £7 15s./£8 10s. oz.
Platinum, £27/£33 5s.
Rhodium, £42 10s. oz.
Ruthenium, £25 oz.
Quicksilver, £70 10s./£71 ex-warehouse
Selenium, 30s. 6d. nom. per lb.
Silver 74d. f.o.z. spot and f'd.
Tellurium, 18s./19s. lb.

ORES, ALLOYS, ETC.

Bismuth 60% 8s. 9d. lb. c.i.f.
50% 7s. 9d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (lumpy) £13 2s. per ton c.i.f.
" " (concentrates) £13 2s. per ton c.i.f.
" " Refractory £12 14s. per ton c.i.f.
Baluchistan Metallurgical £14 15s. 6d. per ton c.i.f.
Magnesite, ground calcined .. £26 - £27 d/d
Magnesite, Raw £10 - £11 d/d
Molybdenite (85% basis) .. 103s. 10½d. per unit c.i.f.
Wolfram (65%) World buying 310s. - 320s.
352s. 6d. Selling
Scheelite World buying 290s. - 300s.
342s. 6d. Selling
Tungsten Metal Powder .. 30s. 8d. nom. per lb. (home)
(for steel manufacture)
Ferro-tungsten 25/3-25/9 nom. per lb. (home)
Carbide, 4-cwt. lots £35 13s. 9d. d/d per ton
Ferro-manganese, home .. £49 15s. 0d. per ton
Manganese Ore U.K.
(48%-50%) 6s. 1d. per unit
Brass Wire 2s. 7½d. per lb. basis
Brass Tubes, solid drawn .. 2s. 1½d. per lb. basis

COMPANY NEWS AND VIEWS

Brakpan's Lower Profit Trend

Notwithstanding the shortage of native labour, Brakpan Mines were able to deal with a bigger milling tonnage during 1952. It was, however, not sufficient to combat the upward trend in working costs and arrest a downward trend in profits. There was a further decline in the native labour strength and little promise is held out for any improvement during the current year.

The increase of 44,000 in the tonnage milled at 1,419,000 was effected by making such changes in mining practice as would permit of an increase in efficiency without a comparatively greater increase in the working costs. Compared with the previous year, the yield per ton decreased from 3.76 dwt. to 3.59 dwt. and the revenue per ton dropped from 49s. 2d. to 45s. 11.4d. Coupled with this substantial decrease was a rise of 1s. 5d. in working costs to 38s. 10d. per ton milled and the resulting profit decreased by 4s. 8.1d. to 7s. 1.4d. per ton.

Total working profit came out at £505,067, being less by £305,828 and was the lowest since 1949. But the tax attracted was considerably less, £177,074 against £392,321, and net profit amounted to £327,993 compared with £418,574 in the preceding year. Shareholders as well as the tax man suffered, the distribution for the year being reduced from 2s. 1½d. to 1s. 4½d. per 5s. share which required a net amount of £316,250 (£488,750). After providing £52,941 (£51,352) for capital expenditure and meeting all other appropriations, the carry forward at the financial year end was £186,529 compared with £153,373 brought in.

A higher footage of development was accomplished, the total on the Main Reef Leader and Hanging Wall Reef amounting to 71,603 ft., of which 14,900 ft., 28.3 per cent of the footage sampled, were payable averaging 14.01 dwt. over 39.61 in. High values were disclosed in the footwall reef but, as the Chairman points out in his speech, there will be a big difference between the development and the stopping values. The tonnage of ore reserves is slightly down and the pay limit has been up-graded. At the end of the year reserves were shown to be 3,925,600 (3,965,000) of a value of 4.66 dwt. over a stopping width of 43.91 in. Included in the reserves are 197,400 tons on the footwall reef, averaging 5.21 dwt.

Springs Disappoints

A disappointing showing was made by Springs Mines during 1952. A lower tonnage was crushed, profit was down and costs increased. The supply of native labour was inadequate to meet requirements and no improvement in the position, the Consulting Engineers state, can be anticipated for the current year.

Tonnage dealt with last year was 1,954,000 as against 2,004,000 in the previous year. There was a slight improvement in the yield per ton to 2.65 dwt. but revenue per ton was 1.2d. lower at 33s. 11.5d. Working costs increased to 30s. 6.5d. (28s. 8.7d.) and the resulting profit per ton was lower by 1s. 11d. to 3s. 5d. These disappointing results led to a large decline in the working profit which at £333,842 was £200,547 lower than in the previous year. Taxation liabilities were, however, substantially lighter, the government share of the profits being cut down to £21,529 against £105,553. Thus net profit amounted to £317,267 (£434,180), a decrease of £116,913. The dividend distribution was reduced from 9d. to 6d. per 5s. share which required £252,750 (£379,125) and after accounting for all other appropriations, the carry forward at the financial year-end was £317,566 compared with £261,109 brought in.

Mine development was on a lower scale and the total footage of 34,984 went against 40,586. Both the Main and Kimberley Reefs were worked, although only 1,102 ft. were accomplished on this latter, of which 1,060 ft. were sampled. The pay percentage was low—18.4, though the value was satisfactory, 7.16 dwt. over 32.64 in. or 234 in.-dwt. On the Main Reef Leader the footage advanced totalled 33,882 ft., of which 28,885 ft. were sampled, averaging 7.86 dwt. Payability was 36.9 per cent. Development on the Kimberley Reef horizon ceased during the year as the extent of the payable channels have been fully exposed. Work is now being concentrated in

the Vlakfontein area in the southern section and it is from this that increased stopping tonnage is being supplied. Ore reserves are down to 3,327,500 tons (4,025,900) of a value of 4.37 dwt. Mr. H. S. Donald is chairman. Meeting, Johannesburg, April 21.

Vereeniging Brick's High Trading Level

Good progress has been made by the Vereeniging Brick and Tile Company since it came into being in 1946. It was formed to acquire from the controlling company—Vereeniging Estates—a valuable business established many years previously for the manufacture of refractories, salt glazed sewer pipes and fittings, building bricks and other earthenware products. In addition to the ownership of the controlling interest in Vereeniging Tiles, the company owns a number of properties in the Vereeniging area. It also has a subsidiary, Rhodesian Refractories, formed a year or two ago, where certain lines of refractory bricks are to be made.

From these different ventures the parent company derives substantial income and during 1952 was able to make a profit of £487,688 which was £90,892 more than that for the previous year. Distribution of profits from the Vereeniging Tiles brought in £29,070. After meeting expenses and all outgoings there was a net profit of £461,686 as against £334,949 for 1951. Ordinary dividend of 20 per cent called for £250,000. This was 2½ per cent lower than previously but paid on a capital increased by a "rights" issue which were worth over 5s. per share.

The demand for the company's wide range of ceramic ware remained at a high level with the result that the value of sales exceeded the 1951 figure. Earnings of Vereeniging Tiles were maintained at a high level and new capital was put into the business to meet its expanding capacity. Activities of the Rhodesian Refractories during the year were confined to exploratory work on the Company's deposits at Gatooma and in the erection of a calcining plant. The company is now engaged in turning out a new product for the building industry in connection with flooring, door lintels and window apertures.

Continued Prosperity of Vereeniging Estate

Closely associated with the Oppenheimer group, Vereeniging Estates is again able to report very satisfactory trading for the year to December 31, 1952. The company possesses a spread of coal, land, mineral and industrial interests, the latter consisting principally of a substantial shareholding in Vereeniging Brick and Tile. About one-half of South Africa's coal output is provided by four collieries, in three of which Vereeniging has a controlling interest. It is this big asset which is the company's mainstay.

Gross revenue for the year amounted to £989,051, compared with £800,858. Expenses and provision for depreciation amounted to £37,878 and there was a net profit of £951,173, which represented an increase of £188,437. With the balance forward there was a total sum of £1,055,467, out of which taxation absorbed £30,301 and £150,000 was transferred to general reserve. Dividend of 27½ per cent (an increase of 2½ per cent) called for £756,250 and the balance was £118,916, carried forward.

The company's four colliery interests are Amalgamated Collieries of South Africa, The Coronation Collieries, Springbok Colliery and South African Coal Estates. This latter paid a dividend of 20 per cent from profits derived from 1,641,706 tons of coal. Amalgamated Collieries's output was 7,864,140 tons, of which 73 per cent was sold to the Electricity Supply Commission for power station purposes. Dividend was increased by 2½ per cent to 17½ per cent. Output from Coronation Collieries and its subsidiary are dependent upon railway transport. The company was able to override difficulties and from profits, stepped up its dividend from 27½ per cent to 35 per cent. Springbok maintained its 30 per cent distribution.

Outside the colliery industry Vereeniging received a dividend of 20 per cent from the Brick and Tile undertaking; sales activities were confined to a residential township and revenue was obtained from sales of stands.

Company Shorts

Union Corporation Profits Increased.—In a preliminary profit statement, Union Corporation has announced the payment of a final dividend of 10d. (U.K. currency) per 2s. 6d. share, free of U.K. income tax, making with the interim distribution of 6d. paid in November last, a total payment of 1s. 4d. per share, free of U.K. income tax. This total distribution compares with 6s. 6d. per 12s. 6d. share, free of tax, in 1951.

The accounts for 1952 showed that after providing £818,300 for U.K. taxation, compared with £1,153,000 in 1951, net profit amounted to £1,058,145, an increase of £75,431 on the 1951 figure of £982,714. The sum of £313,541 was brought in making £1,371,686 available. Exploration reserves received £400,000 (£300,000), total dividend payments required £620,000, leaving £351,686 to be carried forward.

Rhodesian Broken Hill Reduces Dividend to 40 per cent.—In a preliminary profit statement Rhodesian Broken Hill Development Company has announced the payment of the final dividend of 25 per cent per 5s. share making, with the interim payment of 15 per cent, a total of 40 per cent for the year 1952 against a total distribution of 90 per cent in 1951.

Net profit for the year, after providing for all the usual charges including £996,063 (£2,139,732) for taxation, was £1,791,364 compared with £3,609,436 in the preceding year. £500,000 (same) was allocated to reserves and the dividend payments absorbed £1,300,000 against £2,925,000. Dividend warrants will be posted on or about June 12 to members registered April 10.

Amalgamated Banket Raises Dividend to 5 per cent.—Amalgamated Banket Areas has announced in a preliminary profit statement the payment of 5 per cent per 3s. share on its £2,884,900 issued capital which compares with the payment of 2½ per cent in the preceding year. This required a net amount of £75,729, compared with £37,864 previously.

All figures given for the year to September 30, 1952, in the following table, are subject to final audit.

Year to Sept. 30	Mining Profit £	Depreci- ation* £	Working Profit £	Exp'nd at Fanti £	Divi- dend "o" £	Carry Forward† £
1952 ..	323,625	183,806	139,819	70,287	5	146,127
1951 ..	375,718	148,221	227,497	113,106	2½	151,082

* Refers to depreciation—£97,030 (£85,507) and ore development redemption—£86,776 (£62,714).

† After writing off subsidiary company's current account £111 (£112).

The dividend, if approved, will be paid on May 15 to shareholders registered April 7, 1953. Major General W. W. Richards is chairman.

Konongo Maintains Dividend at 10 per cent.—Konongo Gold Mines, the high grade West African gold producer, has announced in a preliminary profit statement the payment of 10 per cent per 2s. share on its issued capital of £619,258 for the year to September 30 last, the same as for the preceding year.

Year to Sept. 30	Working Profit £	Tax- ation £	Net Profit £	Depreci- ation £	Divi- dend "o" £	Carry Forward £
1952 ..	142,491	89,500	52,991	24,274*	10	60,855
1951 ..	171,259†	104,000	67,259	15,272	10	61,379*

* Including depreciation of plant, machinery, buildings, etc., of £17,236 (£15,272), obsolete stores written off £3,601 (nil), chamine properties written down £475 (nil), and provision for additional retiring gratuities to African employees up to September 30, 1951, £2,980 (nil).

† Excluding £4,030 transferred to bullion reserve.

After allocating £20,000 to general reserve.

Subject to confirmation at the annual general meeting to be held on April 28, the dividend will be paid on May 15 to all shareholders registered at the close of business on April 23 next.

For the first five months of the current year ending September 30, 1953, tonnage throughout was approximately 11,600 tons, yielding 11,112 oz., giving a working profit of £51,000, compared with approximately 11,400 tons, yielding 11,010 oz., for a working profit of £49,000 in the corresponding period during the year under review. Mr. Robert Annan is chairman.

Ooregum to Close Down.—Ooregum Mine in the Kolar gold-field, South India, will close down shortly according to a Reuter report from Bangalore. Mr. M. A. Srinivasan, chairman of the Kolar Gold Mining Company, and Mr. A. Taylor, the managing director, when announcing the impending shut-down, said that the mine had been running at a loss of approximately Rs.3,000, equivalent to about £175 per day. The mine had experienced a series of reverses in recent years and it was not now possible to work the mine economically without prejudicing the safety of the workers.

"Rights" Offer by Aluminium Ltd.—Shareholders of Aluminium Ltd., of Montreal, are to be offered rights to subscribe for new shares in the Company at the rate of one new for every ten held. It is planned to issue 818,657 new shares at a price not to exceed \$37.50 (Canadian) a share, or, at the option of the subscribers, the equivalent to United States dollars on the date the price is fixed.

Permission for the issue of the new shares to holders in the U.K. will be requested from the C.I.C., the Board states, and the Treasury will be approached in the hope that they will authorize the acquisition by shareholders of the necessary dollars. It is expected that the date determining shareholders' entitlement will be on or about April 24 next.

Mr. Nathanael V. Davis, president, told shareholders that the proceeds of the issue would go towards financing the Company's expansion programme in Quebec, British Columbia, and the Carribean area. In this connection the Company's chief subsidiary, Aluminium Company of Canada, is planning to offer shortly in Canada new Preferred shares having a value of \$300,000,000. It is thought that this new series of Preferred shares, which may be designated Second Preferred, will consist of 300,000 shares having a par value of \$100 per share and carrying interest at the rate of 5 per cent per annum.

South African Limestone Discovery.—The Northern Lime Company has announced that, as a result of extensive investigation conducted by the Central Mining Investment Corporation, a hitherto unknown area of very high grade primary limestone has been proved to exist near rail at Silverstreams, about 100 miles west of Kimberley. The results of a borehole drilling programme indicates that the quantity of first-grade limestone present on farms, over which the Northern Lime Company holds rights, is sufficient to satisfy South Africa's entire lime demand for many generations ahead. Plans for development include the installation of a rotary kiln, the first of its kind in the Union, with output capacity in excess of 100,000 tons of lime a year.

Rhoanglo Bill Second Reading Unopposed.—The Rhoanglo Group Bill, a private measure providing for the transfer of the registration of the five companies in the Group from the United Kingdom to Northern Rhodesia, was unopposed in its second reading in the House of Lords earlier this week.

Consolidated Diamond Mines of S.W.A. to Amend Company's Articles.—The Consolidated Diamond Mines of South West Africa will hold an extraordinary meeting at Kimberley on April 24 next at which a special resolution will be submitted to amend the Company's articles. It is recommended that in future, 21 clear days' notice shall be given to shareholders of all meetings.

Sherwood Starr's Extraordinary Meeting.—The Sherwood Starr Gold Mining Company have announced that an extraordinary meeting will be convened in Salisbury, S. Rhodesia, on April 15, to consider, as a special resolution, that the Company be placed in voluntary liquidation.

B.I.C.C. Acquire Phillips Electrical Works, Canada.—British Insulated Callender's Cables have announced the acquisition, as from April 30 next, of the cable and wire business of Phillips Electrical Works Ltd., Canada, and will, through a new Canadian Company which they are forming with the name of "Phillips Electrical Company (1953) Ltd.," carry on business as a going concern at the existing Brockville (Ontario) and Montreal factories.

The Board of this new Company will consist of Mr. W. H. McFadzean, chairman; Mr. A. D. Torrey, vice-chairman; and Mr. H. F. Akehurst, president; Mr. T. A. Lindsay, executive vice-president in charge of sales; Mr. J. R. Philips, executive vice-president in charge of operations; and Mr. H. D. Scully.

West Vlakfontein To Stop Prospecting.—West Vlakfontein Gold Mining Company, which ceased underground operations in June, 1950, have announced that they have accepted the recommendation of their technical advisers, New Consolidated Gold Fields, Ltd., that all prospecting operations at the mine be terminated forthwith. New Consolidated Gold Fields has relinquished its position as technical advisers and has also resigned as secretaries to the company. East Rand Consolidated, Ltd., have now taken over these functions.

The announcement also states that Mr. S. R. Fleischer and Mr. P. S. Hammond have resigned as directors and have been succeeded by Mr. S. F. Dench and Mr. F. E. Wigley. Mr. J. M. M. Ewing has relinquished his position as deputy-chairman.

British Malayan Tin Makes Small Profit.—Although British Malayan Tin Syndicate produced 110 tons of tin concentrates of an average value of 38 per cent tin metal as compared with 80 tons in the preceding year, net profit for the year ended June 30 last, after providing for all the usual charges, was only £158, compared with a net loss in the preceding year of £470.

RHODESIAN ANGLO AMERICAN LTD.**DIVIDEND No. 33.**

The Directors have to-day declared an Interim Dividend in respect of the year to June 30, 1953, of one shilling and sixpence (1s. 6d.) per unit of Stock.

Dividend Warrants will be posted on or about May 14, 1953, to members registered at the close of business on April 10, 1953. The Transfer Registers in London and Johannesburg will be closed from April 11 to 18, 1953, inclusive.

This dividend declaration is based on payment being made in United Kingdom sterling. Payment to members registered on the Branch Register will be made in the equivalent Union of South Africa currency, provided that if in the opinion of the Directors there is no material difference between the two currencies at the time of payment of the dividend, such members will receive payment at par of exchange.

Dividends payable to addresses in the United Kingdom will be subject to deduction of United Kingdom Income Tax at a rate reduced by a provisional allowance for relief from double taxation. Other dividends will be paid without any deduction of tax.

For and on behalf of

ANGLO AMERICAN CORPORATION OF SOUTH AFRICA LIMITED.

Registrars and Transfer Agents in England.

W. E. GROVES,
London Secretary.

11. Old Jewry,
London, E.C.2.
March 25, 1953.

Mining Men and Matters

Lt. Col. R. L. Broad has been appointed a director of Blyvooruitzicht Gold Mining, Harmony Gold Mining, and Loraine Gold Mines in succession to **Mr. H. A. McKay**, who has resigned.

Mr. A. R. Neelands has been appointed chairman of The Cementation Company, and **Mr. W. A. Pickersgill** and **Mr. P. D. Tolhurst** have been appointed to the board, **Mr. W. A. Pickersgill** being appointed managing director.

Mining and Metallurgical Club Golfing Society.—At the annual general meeting of the Society, held at 4 Whitehall Court, S.W.1, on Monday, March 23, **Mr. St. J. R. C. Shepherd** was elected President of the Society for the coming year and **Mr. A. de Fraine** was elected Captain in succession to **Mr. R. M. Smart**. After the formal business had been concluded the members dined together.

Mr. John Francis Waight has been awarded the 1952 W. H. A. Robertson Medal and Premium by the Council of the Institute of Metals for his paper on "Gas Equipment for the Thermal Treatment of Non-Ferrous Metals and Alloys."

Sondes Place Research Institute Expanding.—McTaggart and Evans, Ltd., have announced that a new section of the Sondes Place Research Institute's laboratories has recently been opened for the assaying and analysis of ores and metals and the testing of minerals by froth flotation and other methods. This new section will be under the supervision of **Mr. E. W. Dawson**. It is also announced that it is hoped to instal pilot plant soon which will enable larger quantities of materials to be treated than is possible in the laboratory.

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NATIONAL BANK OF INDIA**SATISFACTORY PROGRESS**

The annual general meeting of The National Bank of India, Ltd., will be held on April 14 in London.

The following is an extract from the circulated statement by the Chairman (**Mr. J. K. Michie**) relating to the accounts for 1952:—

Recently **Mr. J. R. H. Pinckney** has been reducing his business responsibilities and expressed a wish to retire from our board. He will cease to be a member after this meeting and we part with him with great regret.

To fill this vacancy we have appointed to the board **Mr. T. K. Allan** who retires from the position of general manager on March 31. It is our wish that the accumulated experience which **Mr. Allan** has gained in fifty years of service should not be lost to us.

The total of the consolidated balance-sheet shows a reduction of £3,816,532 to £143,467,142 which in the conditions met during the year is a relatively small decline. The figure relating to the National Bank of India, Ltd., alone has fallen by £1,839,229, although the total of deposits has in fact risen slightly—Loans payable, on the other hand, have fallen from £4,000,000 to £740,663.

On the other side the book advances have fallen by over £12 millions and, in consequence, cash and investments, including bills of exchange, etc., show an overall increase of £10,962,165. As I explained last year there were special reasons for advances being temporarily high at December 31, 1951.

After making full provision for taxation and other necessary reservations net profits are £381,444, a reduction of £29,229 compared with 1951 results which were exceptional. We are therefore satisfied with the results and with the progress the bank is making.

We continue to have to spend money on premises and housing but because of the long-term nature of these assets we have decided it is more logical to spread writings-down over a more extended period and this year we are allotting £75,000 for this purpose. As you can appreciate your properties are worth very much more than the figure at which they stand in the books. We have allocated £115,000 to contingencies reserve account thereby strengthening our inner reserves, leaving the carry-forward practically unaltered.

Grindlays Bank, Ltd., again had a satisfactory year, and we continue to be satisfied with their progress. There is no special feature requiring comment in regard to the operations of our Finance and Development Corporation.

NEW BRANCHES

Branches of the bank have been opened at the following places since my last report: Hargeisa, Somaliland Protectorate; Eldoret, Kenya; Moshi, Tanganyika Territory.

The offices at Soroti and Tororo, opened originally as sub-branches to Mbale, Uganda, have now become full time independent branches. Other developments are in train.

The expectation I expressed last year that 1952 would be "a year of adjustment" was certainly proved true and in some countries and in certain sections of commerce and industry it involved considerable pain and tribulation.

Hardly a commodity in the finance of which we are concerned escaped a severe fall in value—jute, cotton, and tea in India and Pakistan, rubber, copra, and coconut oil in Ceylon (her tea industry suffered but in a minor degree), cotton in Uganda and sisal in Tanganyika. Prices of coffee in East Africa and rice in Burma were exceptions but the rise in the price of Burma rice embarrassed still further her neighbouring consumers, India and Ceylon.

Consumer buying power inevitably fell and this was aggravated in some countries by the previous excessive imports resulting in a very poor year for the importer. This position both through Governmental restrictions made necessary by lack of foreign exchange and by the commonsense of importers is now being rectified and, if smaller in volume, trade should now be sounder in character than it was.

CHAIRMAN'S TOUR OF THE EAST

I have just returned from a tour of the East, during which I visited all except four of our branches East of Suez. What I saw of our business and our staff was encouraging. Our relations with the various Governments and with the central banks, which in our sphere of activities represent them, are excellent and the spirit of service which is a well-kept tradition throughout the staff is appreciated by our customers.

The changes caused by the achievement of political independence in India, Pakistan, Burma, and Ceylon have demanded a re-orientation by British business operating in these countries and I think the necessary adjustments, mental and otherwise, have been made very successfully.

One cannot but be struck by the initiative being displayed by the new Governments, made up in some cases of names previously quite unknown to the political scene.

That their dynamic urges, spurred in varying degree by nationalism, have led to actions and policies which have not been particularly successful, they themselves would probably admit but the past two years have at least brought first-hand experience which I hope will be heeded in future.

Extreme nationalism, I fear, often regards its aims as justifying themselves irrespective of their economic results; on the other hand, all these countries require and want foreign aid in the form of capital, and I hope that a mutually happy *modus vivendi* for British capital and its necessary British personnel will be found. Good-will and tolerance will be necessary on both sides.

But I was struck by the calibre, *esprit de corps* and enthusiasm of our staff of all ranks wherever I went and once again we owe them genuine praise and sincere thanks for their work during the past year.

I will end by reference to an issue about which I am often asked and with which all countries in the sterling area and we

as an exchange bank are deeply concerned—free convertibility of sterling. It has been my view that this most desirable consummation can only come by being worked for and that to experiment with such a measure before ensuring adequate safeguards in the form of gold and dollar balances would be catastrophic.

At the time of writing the means to solution of this question are under discussion in Washington and it is to be hoped that the result will be a positive contribution. Until then barter arrangements with their restrictive effects are likely to continue.

The bane of our economic existence to-day is "autarchy" a policy bred by fear out of nationalism. When, for instance, rice can be grown at less than half the cost of buying it in world markets it is surely plain common sense to put capital into agriculture rather than into industries the products of which have to be subsidised. That may be an over-simplification, it is nevertheless basically true.

Despite the difficulties of the times through which we are passing I have complete faith that your business will grow and expand and I believe our prospects for 1953 are quite favourable.

THE NATIONAL BANK OF INDIA, LIMITED

Registered in London under the Companies Act of 1862 on the 23rd March, 1866

ESTABLISHED IN CALCUTTA, 29th SEPTEMBER 1863

Subscribed Capital	£4,562,500
Paid-up Capital	£2,281,250
Reserve Funds	£3,675,000
Number of Shareholders	3,039

HEAD OFFICE - 26 BISHOPSGATE, LONDON, E.C.2.

BALANCE - SHEET, 31st DECEMBER 1952

	£	1951
CAPITAL—Authorized and Subscribed— 182,500 Shares of £25 each	4,562,500	4,562,500
Paid-up £12 10s. per Share	2,281,250	2,281,250
RESERVE FUNDS—Including Share Premium Account, £1,128,750 (1951— £1,128,750)	3,675,000	3,675,000
PROFIT AND LOSS ACCOUNT :— Profit unappropriated	274,980	275,161
	6,231,230	6,231,411
CURRENT LIABILITIES, PROVISIONS AND OTHER ACCOUNTS :— Current and other Accounts, including provision for Doubtful Debts, Taxa- tion on Profits to date, and reserves for contingencies	89,004,213	89,803,997
Fixed and Short Deposits	21,927,618	20,156,131
Amounts due to Subsidiary Companies	2,864,042	1,267,707
Loans Payable	740,663	4,000,000
Bills Payable	1,584,541	1,779,884
Acceptances for Customers	1,010,296	1,962,702
Second Interim Dividend, less Income- tax for the year ended 31st December 1952	95,812	95,812
	117,227,185	117,227,185
	£123,458,415	£125,297,644

	£	1951
CURRENT ASSETS :— Cash on Hand, at Call and Short Notice and at Bankers	20,345,056	17,370,212
Investments at under Market Value :— British Government and other sec- urities quoted on the London Stock Exchange	11,483,585	11,779,649
Indian, Pakistan, and Ceylon Govern- ment and other Rupee Securities quoted on Overseas Stock Ex- changes	9,876,253	8,811,300
East African Government Securities amounting to £966,200 and other unquoted Investments	991,488	1,132,521
Bills of Exchange, including Treasury Bills	23,722,144	16,362,679
Advances, Loans Receivable, and other sums due to the Bank	53,317,597	65,476,404
Customers for Acceptances per Contra Total Current Assets	120,746,419	122,895,467
SUBSIDIARY COMPANIES :— Shares at cost less amounts written off	1,450,000	1,450,000
FIXED ASSETS :— Bank Premises, Property and Furniture at cost, less amounts written off	1,261,996	952,177
	£123,458,415	£125,297,644

NOTES :—

(1) Securities to the nominal value of £642,500 (1951, £612,500) have been lodged as security for Government accounts and for guarantees issued to Indian Government Departments.

(2) Bills receivable rediscounted £115,814 (1951, £14,680,169) of which up to 12th March 1953 £66,700 have run off.

(3) Forward contracts outstanding for the purchase and sale of Bills and Telegraphic Transfers £46,929,156 (1951, £113,834,771).

(4) Liabilities have been incurred in respect of building contracts for new premises amounting to approximately £565,107 (1951, £516,689).

(5) There are contingent liabilities in respect of confirmed credits outstanding amounting to £9,233,520 (1951, £28,586,847).

(6) There are contingent liabilities in respect of guarantees entered into in the ordinary course of business.

(7) Overseas Current Assets and Liabilities have been converted at the rate of 1/6 per Indian rupee, 1/6 per Ceylon rupee, 1/6 per Burma kyat, 2/2 per Pakistan rupee, and £1 per 20 East African shillings, and other currencies at the rates of exchange ruling on 31st December 1952.

T. T. K. ALLAN, General Manager.
D. A. DEELEY, Accountant.

J. K. MICHIE
A. N. STUART
R. L. HIRD } Directors.

REPORT OF THE AUDITORS TO THE MEMBERS

We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of our audit. In our opinion proper books of account have been kept by the Bank so far as appears from our examination of those books and proper Returns adequate for the purposes of our audit have been received from Branches not visited by us. We have examined the above Balance-Sheet, which is in agreement with the books of account and Returns. In our opinion and to the best of our information, and according to the explanations given to us, the said Balance-Sheet gives the information required by the Companies Act, 1948, in the manner thereby authorized for Banking Companies, and on such basis the Balance-Sheet gives a true and fair view of the state of the Bank's affairs as at 31st December 1952.

We have also examined the annexed Consolidated Balance-Sheet and Consolidated Profit and Loss Account of the Bank and its Subsidiaries dealt with thereby with the audited accounts of those Companies. In our opinion such Consolidated Balance-Sheet and Consolidated Profit and Loss Account have been properly prepared from such accounts in accordance with the provisions of the Companies Act, 1948, in the manner thereby authorized for Banking Companies and, on this basis, give a true and fair view of the state of affairs and of the profit ascertained in the manner therein indicated of the Bank and its Subsidiaries so far as concerns members of The National Bank of India, Limited.

COOPER BROTHERS & CO.,
W. A. BROWNE & CO., } Auditors.
Chartered Accountants.

London, 13th March, 1953.

THE VEREENIGING ESTATES LIMITED

(Inc. in the Union of S. Africa)

GROSS REVENUE INCREASED

MR. T. COULTER'S STATEMENT

The fifty-fourth annual general meeting of The Vereeniging Estates Ltd., will be held in Johannesburg on May 15.

The following is an extract from the statement by the Chairman, **Mr. T. Coulter**, circulated with the annual report and accounts for the year ended December 31, 1952:

The gross revenue for the year amounted to £989,051 compared with £800,858 for the previous year. Expenses, including directors' fees, salaries and provision for depreciation amounted to £37,878, leaving a net profit carried to appropriation account £951,173, which represents an increase of £188,437 when compared with the previous year's operations.

To this figure has to be added the balance on appropriation account of £104,294 brought forward from the previous year, giving a total sum of £1,055,467 to be dealt with. Provision for taxation absorbed £30,301 and £150,000 has been transferred to general reserve account. An interim dividend of 10 per cent was paid during August of the year under review and a final dividend for the year of 17½ per cent has recently been declared, making a total distribution for the year of 27½ per cent, which absorbed £756,250. These appropriations accounted for £936,551 and leave a balance on the appropriate account of £118,916, which has been carried forward to the current year. Dividend declarations for the year totalled 27½ per cent, which represents an increase of 2½ per cent on the distribution made for the previous year. As the interim dividend paid in 1951 was distributed on the then issued capital of £2,250,000 prior to the issue of 500,000 shares in the latter part of 1951, referred to in my statement on the previous year's accounts, the amount distributed to stockholders during 1952 has increased by £118,750 when compared with the distribution for 1951.

COLLIERY INTERESTS

A shortage of railway transport which seriously dislocated the coal industry in 1951 recurred during the winter months of 1952, although not with the same severity. During the whole of 1952 little or no tonnage was exported, but it is hoped that the various measures now being adopted by the Railway Administration to provide additional transport facilities, will enable the industry to make an early start in recapturing some of its former overseas markets.

A large proportion of the output produced by the collieries in which your company owns substantial direct and indirect interests, is supplied to power stations without touching the railway system, while in certain other cases, where railway transport is involved in the supply of power station coal and coking coal, a priority shuttle service of trucks is provided by the Railway Administration. Consequently these collieries are not affected to the same extent by railway transport shortcomings as those engaged in the general trade.

Amalgamated Collieries of South Africa Ltd. The sales output of this company, comprising the outputs of its directly operated collieries and of wholly owned subsidiary companies, amounted to 7,864,140 tons, which is an increase of 770,486 tons over the output for the previous year. Approximately 73.6 per cent of this tonnage was sold to the Electricity Supply Commission for power station purposes under long-term contracts and the increase in output was due in a large measure to new generating plant coming into operation at Vaal Power Station.

Dividends declared for the year 1952 amounted to 17½ per cent, which is 2½ per cent higher than that declared for 1951.

The Coronation Collieries Ltd. The sales output of this company for the year under review was 1,097,549 tons, which is 25,546 tons more than the figure for 1951. The sales output of its subsidiary, Vryheid Coronation Ltd., was 492,863 tons of coal and 298,610 tons of coke. The coal output dropped by 87,449 tons when compared with 1951, but the coke output has practically doubled from the figure of 157,342 tons for 1951, due to the coming into operation during the year of a portion of the subsidiary's new coke-manufacturing plant. Both the company and its subsidiary are entirely dependent upon the Railway Administration for the distribution of their total outputs.

Dividends declared during the year amounted to 35 per cent, as compared with the distribution of 27½ per cent during 1951.

Springbok Colliery Ltd. This company sold 849,547 tons of coal during the year, which is a drop of 22,791 tons when compared with the previous year. Springbok Colliery is also entirely dependent on the Railway Administration for the handling of its output.

Dividends declared during the year totalled 30 per cent and were unchanged compared with the distribution made for 1950 and 1951.

South African Coal Estates (Witbank) Ltd. The sales output of this company, in which your company has a substantial interest, was 1,641,706 tons, compared with 1,750,159 tons for the previous year.

Dividends declared for the financial year ended June 30, 1952, totalled 20 per cent, which was unchanged compared with the previous year.

VEREENIGING BRICK AND TILE COMPANY LTD.

The share capital of this company was increased in the early part of the year by the issue of 2,100,000 Ordinary shares at par to existing shareholders in the ratio of 18 new shares for every 25 shares held. Your company took up its rights under this issue, and underwrote the issue free of commission.

The net distributable profit earned by the company after taxation amounted to £323,461, which figure is to be compared with £240,091 earned in 1951. The normal Preference share dividends at 5½ per cent per annum were paid and the distribution to Ordinary shareholders amounted to 20 per cent on the increased capital, which is to be compared with 22½ per cent distributed in the previous year prior to the capital increase. The amount distributed to Ordinary and Preference shareholders for the year totalled £277,500, which is £86,875 more than that distributed during 1951.

TOWNSHIPS

The company's sales activities were confined to the residential townships of Three Rivers Extension No. 2 where the demand for stands remained steady throughout the year. Consideration is now being given to the laying out and development of a new residential township immediately to the south of the original Vereeniging township. The company's Peacehaven and Three Rivers townships have developed to such an extent that they have become the popular residential suburbs of Vereeniging. More than 1,100 dwelling houses now exist in these suburbs with a municipal valuation at the end of the year in excess of £3,680,000.

In accordance with the company's usual policy, revenue from sales of stands has been accounted for in the profit and loss account only to the extent of cash received and the profit in suspense is reflected in the balance-sheet to the amount of £74,850 as revenue from townships carried in suspense.

Copies of the annual report and accounts may be obtained from the London Transfer Office of the company, 11 Old Jewry, E.C.2.

VEREENIGING BRICK AND TILE COMPANY LIMITED

(Inc. in the Union of S. Africa)

HIGH LEVEL OF DEMAND MAINTAINED

MR. T. COULTER ON EXPANSION OF BUSINESS

The seventh annual general meeting of Vereeniging Brick and Tile Company Ltd. will be held in Johannesburg on May 15.

The following is an extract from the statement by the Chairman, **Mr. T. Coulter**, dated March 12, 1953, circulated with the report and accounts for the year ended December 31, 1952:

The profit from trading, after providing for working costs and administration, amounted to £487,688, which was £90,892 more than the trading profit for the previous year. Interest and sundry revenue received amounted to £7,980 and dividends received from the subsidiary company, Vereeniging Tiles Ltd., being distributions of profits made during 1951 and 1952, were £29,070, giving a total credit of £524,738. Directors' fees, contributions to the staff pension fund, provision for depreciation and donations absorbed £63,052, leaving a net profit of £461,686, as against £334,949 for 1951. Provision for taxation accounted for £138,225 and capital increase expenses amounting to £2,548 have been written off.

The usual Preference dividends absorbed £27,500, and Ordinary dividends Nos. 11 and 12 of 4½d. and 7½d. respectively, equal to 20 per cent, totalled £250,000. This Ordinary distribution is 2½ per cent lower than the declarations for 1951, but shareholders are reminded that the dividends for the year under review have been paid on the considerably higher Ordinary share capital, consequent upon the offer to shareholders, of which full particulars are given in the report of the directors. The sum distributed among Ordinary shareholders in 1952 was £250,000, as compared with £163,125 distributed in respect of the previous year.

The balance carried forward on appropriation account to the current year is £97,116, or £43,413 more than the sum brought forward from 1951.

The increase in the value of fixed assets during the year by £152,734 to £1,543,688 is due to the expansion carried out in the various production departments of the company's works, which is dictated by the increasing demand for its products, chiefly salt-glazed ware and refractories. The value of investments at £155,805 has increased by £33,200 through further investments in the company's subsidiaries. The improvement in the value of current assets and in the company's liquid position is attributable to the capital increase already referred to, which has provided the funds for the envisaged expansion programme which will be undertaken in the current year.

The demand for the company's wide range of ceramic ware remained at a high level throughout the year, with the result that the value of sales exceeded the 1951 figure by a considerable margin. All departments within the three works contributed toward the increased business done during the year.

VEREENIGING TILES LTD. This subsidiary company had a successful year and earned profits at a higher level than those obtained in 1951. The issued capital of this subsidiary, which now stands at £90,000, was increased by £30,000 during the year in order to provide funds to meet the cost of expanding the capacity of the works.

RHODESIAN REFRACTORIES LTD. The issued capital of this subsidiary was increased by £30,000 during the year under review to a total of £150,000 of which 60 per cent has been subscribed by your company. The company was formed in 1951 with the primary object of supplying raw and calcined magnesite to your company, and to the Consolidated Rand Brick Pottery and Lime Company Ltd., who have subscribed 40 per cent of the share capital.

Activities during the year were confined to exploratory work on the deposit at Gatooma and in the erection of the calcining plant which is in commission and undergoing tests. A small operating loss was incurred during the year under review, but it is anticipated that satisfactory profits will be earned from the time when the calcining plant comes into production.

The company is now establishing a new department designed to manufacture under licence granted by the patentees, a pre-stressed concrete beam which will be marketed as the "Stalton" beam. Used in conjunction with terra cotta hollow blocks also manufactured by the company, the Stalton beam will provide the building industry with an attractive method of laying floors in multi-storey structures which should effect considerable savings when compared with the conventional reinforced concrete floor. The Stalton beam will also have an excellent application as a lintel over door and window apertures. It is anticipated that production will commence about the middle of this year.

Subject to there being no adverse change in trade conditions affecting the iron and steel and building industries, it may be reasonably anticipated that the volume of business done by your company during the year under review should be at least maintained in the current year, and those manufacturing departments which have experienced steady growth in recent years should continue to show further progress.

Copies of the annual report and accounts may be obtained from the London Transfer Office of the company, 11 Old Jewry, E.C.2.

DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH: SENIOR GEOLOGISTS. The Civil Service Commissioners invite applications for three or four pensionable posts in the Atomic Energy Division of the Geological Survey.

Appointment involves short-term field investigations on radio-active mineral deposits in various countries overseas.

Age at least 26 and under 31 on May 1, 1953. Candidates must have a university degree in geology with first or second class honours or an equivalent qualification or have high professional attainments. They must have had at least three years appropriate post-graduate experience on the mineralogical-petrological side, or have been engaged in the mining industry or other approved work for a similar minimum period.

Inclusive London salary (men) £812-£1,022; (women) £681-£917. A starting salary above the minimum may be given in appropriate cases. Non-taxable subsistence and other allowances are payable overseas.

Promotion prospects.

Further particulars and application forms from Civil Service Commission Scientific Branch, Trinidad House, Old Burlington Street, London, W.1, quoting No. S. 169/53. Application forms to be returned by April 16, 1953.

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Further particulars and application form will be sent by the undersigned on receipt of a stamped addressed foolscap envelope. Last date for receipt of applications: Monday, April 20, 1953. Applications not on the form provided will be disregarded.

E. C. SMITH, Principal. March 20, 1953.

MINING ENGINEERS required for British Guiana. Age 25/40, must be single. University Degree and five years minimum experience open pit mining. Required to assist in supervision of operations using power shovels, draglines, bulldozers and tractor scrapers. Write full particulars, training and experience, to Box 531, The Mining Journal, 15 Wilson Street, Moorgate, London, E.C.2.

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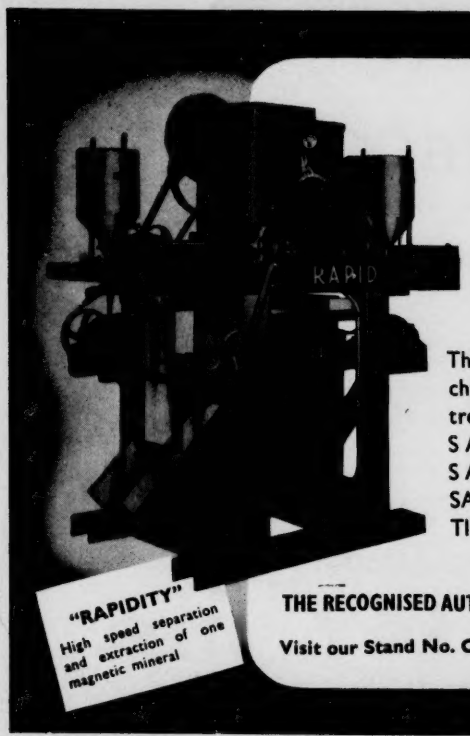
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